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Steamboat Disasters.

During the operation, last year, of the new Steamboat Law, for the better preservation of life, we had great reason for congratulation on its success during that brief period. We were always fearful, however, of things soon dropping back into their old and terrific condition; and these fears, we regret to say, have been verified. When the law was passed, we stated that however good and stringent were its provisions, they were all worthless if the officers appointed to carry them out were either incapable of, or negligent in performing their duties.

Since the opening of navigation, this year, on our Western waters, three dreadful casualties have already taken place. The explosion of the "Kate Kearney" we described on page 211; since then the steamer "Caroline" was burned, and 40 lives lost; and on the 13th ult. the "Reindeer" exploded her boilers at the first turn of her wheels in leaving the wharf at Cannelton, Ky., by which from thirty to forty persons were instantly killed, and a great number dangerously wounded. The scene of agony, it is said, baffled all description. This vessel was bound down to take the place of the "Kate Kearney," and was said to be a fine boat. It appears to us that the Inspectors on our Western waters have not done their duty, or these accidents would not have occurred. We hope their conduct will be promptly investigated, and we call upon the government to issue a Commission at once for this purpose. The country holds the President and his Cabinet responsible for the improper execution of the laws. The blood of 150 of our fellow beings, who have been murdered within two months by explosions and burnings, cry aloud for judgment against the guilty.

The Courage of Science.

Courage in the battle-field is celebrated in history and in song, but little is said of the courage exhibited in pursuing scientific investigations, though often displaying more real elements of bravery than ever were called into action in war. It is said that when Arago and Dulong were employed by the French Government to make experiments upon the subject of the construction and safety of steam boilers, the task executed by the two philosophers was one of as much danger as difficulty. The bursting of boilers, to which they were constantly exposed in a limited locality, was more hazardous than that of shells upon a battle field, and while military officers who assisted them—men of tried courage in the conflict—grew pale and fled from the scene, the savans proceeded coolly to make their calculations, and observe the temperature and pressure upon boilers almost at the very point of explosion.

Another Asteroid.

A new planet has been discovered between Mars and Jupiter, making the twenty-eighth of the group of asteroids, which are supposed to be the fragments of a large planet that once existed between Mars and Jupiter. The new member of this group was discovered almost simultaneously at Bishop's observatory in London, and at Radliff's in Oxford.

HALL'S TELEGRAPH CLOCK.

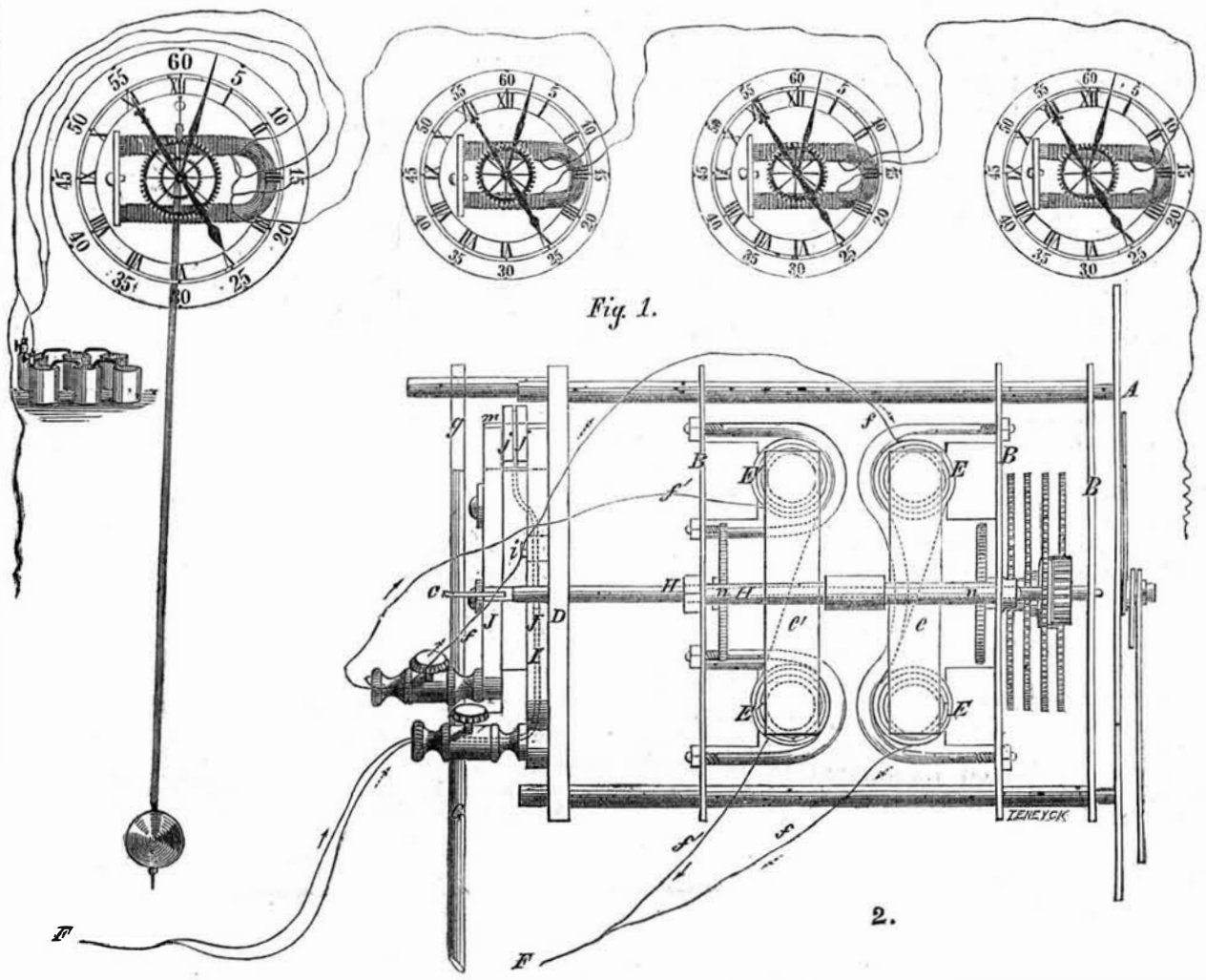

Fig. 1.

2.

The annexed engravings are views of the Telegraph Clock of Prof. Alexander Hall, of Loydsville, Ohio, who has taken measures to secure a patent for the same. The great object of this clock is its application to railroads for maintaining uniform time at all the stations (the whole series of clocks in the line being moved by one) in order to prevent accidents, a number of collisions having occurred by the variations of clocks at different stations, and the time kept by the conductors.

Figure 1 is a front view of a series of clocks, each at a different station on the line of railway, and all operated by one pendulum; figure 2 is a side view of the clock, constructed like the one with the pendulum in figure 1; figure 3 is a back view of the same, and figure 4 is a top view. The same letters refer to like parts. Figure 5 is a front view of an improvement applied to a common clock, whereby it can be made to work a series of clocks and make them keep uniform time.

This invention relates, 1st, to certain mechanism which is employed for the purpose of transmitting to the pendulum the motion which is obtainced by the alternate attraction of the amatures of two electro-magnets, as an electric current is caused to flow through them. 2nd. It also relates to certain means of closing the circuit as it is changed from one electro magnet to the other, to give motion to the pendulum. 3rd. It also relates to the peculiar arrangement of permanent magnets for the purpose of perfectly securing and retaining the connection by which the circuit is closed, until it is required to be broken or opened.

A is the dial of the clock; B B are the plates, and C C the posts which are of metal, and constitute the frame; D is the back which is of wood; G is the pendulum rod suspended by a spring, *g*, from a post standing out from the back; E E′ are two electro-magnets placed side by side in a horizontal position. Each of these magnets is coiled round with one of two wires, *f f′*, which branch off from and again unite in the wire or conductor, F, which is supposed to be connected at opposite ends with a battery. The two branches, *f f′*, of the wire, F, are for the purpose of making an electric current pass through each of the magnets alternately by breaking the circuit through one branch and closing it through the other; H is a vibrating beam secured on a center pin, *a*; it has attached to it—at equal distances from the center—the armatures, *e e′*, of the magnets. Being thus arranged, by a slight vibratory motion, one of the armatures will be brought in contact and the other thrown out of contact with the poles of its magnet. To the rear end of the beam, H, is firmly attached a thin flat steel spring, Z, which possesses sufficient strength to transmit the necessary amount of maintaining power from the beam to the pendulum, and is connected to the upper part of the pendulum rod by a light wire, *c*. The pendulum as it vibrates gives motion to a light lever, I, of the first order which vibrates on a fixed stud, *i*. This lever is formed of wire and forked at the bottom to receive the pendulum rod, and the rod is allowed some play in the fork. At its top end it carries a small wooden block, *d*, on either side of which is secured a piece of soft iron, *m*, and on the top are two pieces of silver wire, *k k′*, which are bent towards opposite sides, and made of wedge form at their extremities. On one side of the lever, I, a pair of *permanent* magnets, J J, are secured to the back, D, and on the opposite side a similar pair, J′ J′. The magnets of each pair are separated by a piece of ivory or dry wood between them; the pair J J, are intended to form part of the circuit through the branch wire, *f*, and the pair, J′ J′, part of the circuit through the branch wire, *f′*, and hence the wires are connected with their lower ends. The upper ends are not connected, in order that the circuits may be broken, but each pair has two small pieces of brass, *j j*, soldered to the upper poles in such a position that the wedge points of the wires, *k k′*, will be carried between and away from them alternately by the vibrating of the pendulum, and thus close the circuit through one branch wire, and break the circuit through the other, alternately in succession. When the point of either wire is between and in contact with the pieces, *j j*; the piece of soft iron, *m*, on the same side, is in contact with or near enough to the poles of the magnets to be sufficiently under the influence of their attraction to hold the point in its place and thus keep the circuit closed until the proper time for breaking it. The manner in which the change of the direction of the current from one branch wire is effected, is as follows: suppose the pendulum to be in motion, and to have just completed its stroke to the right as shown in figure 3; the lower end of the lever, I, has been moved to the right also, the upper end towards the left, and the point of the wire, K′, has just arrived between the brass pieces, *j j*, on the top of the magnets, J′ J′, as shown in figure 4. The circuit through the branch, *f′*, of the wire is just closed, and about to follow the direction of the arrow running to the left, at F, above in figure 4, and to the right returning at F, below. The beam, H, in same figure, with the armature, *e*, in contact with the magnet, E, which is now inoperative, is just about to move under the influence of the magnet, E′, on the armature, *e*. The movement of the beam and the pendulum take place, and that of the latter—just before it terminates—causes the point of the wire, K′, to be withdrawn from between the brass pieces, *j j*, on the magnets, J′ J′, and the points of the wire, K′, to be

[*Continued on the Fourth Page.*]

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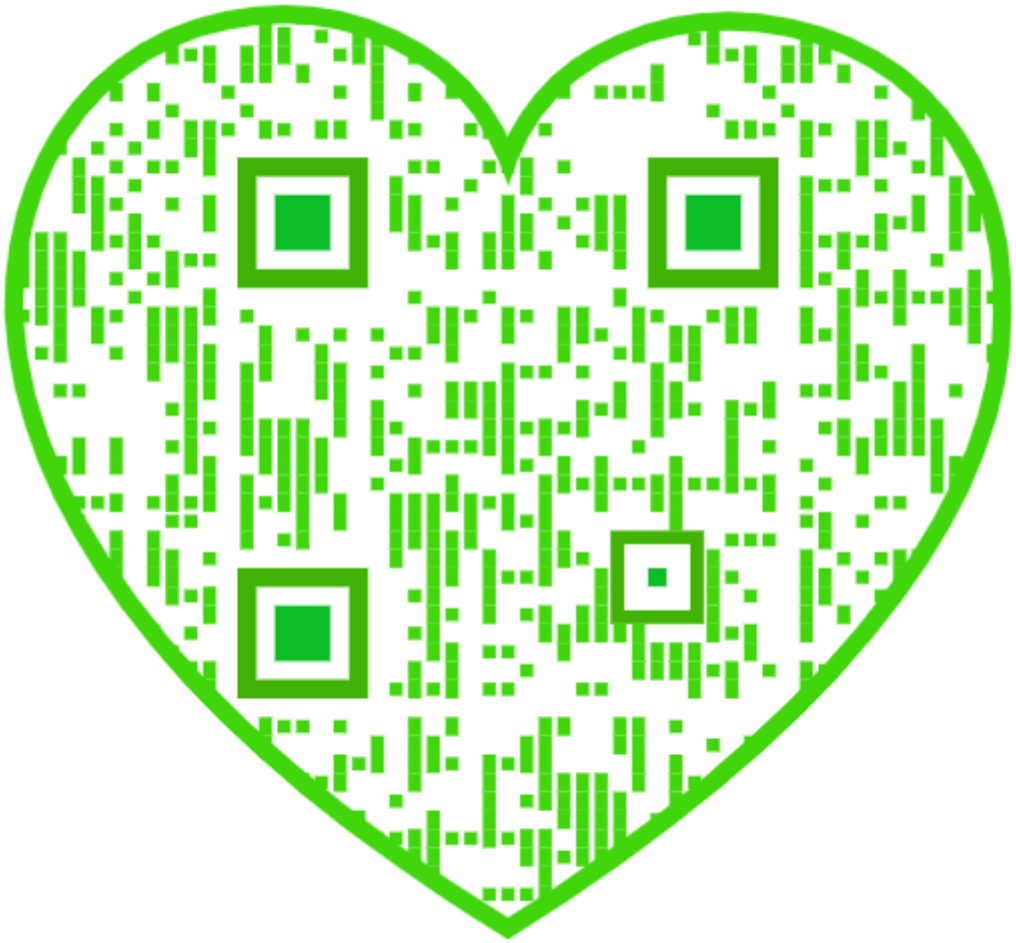

Commissioner of Patent's Report for 1853.

[Concluded from page 262.]

The large number of models belonging to rejected applications would therefore still be left in their present condition, which is constantly growing worse as their number continues to augment. The law requires these to be arranged and preserved in the same manner as those of patented inventions. If a discrimination were allowed, some of these, being mere duplicates of other models, or representing contrivances wholly unpatentable, might be dispensed with, which would partially relieve their present crowded condition. But a considerable proportion of these rejected models are almost as useful as those of patented inventions. They show the different shapes in which, what the office would regard as the same invention substantially, may present itself, and often furnish a far more satisfactory reference on which to reject a new application than could be otherwise obtained. For these reasons those models should, if possible, be brought from their present dark and incommodious recesses in the basement, and exposed to the clear light of the upper day, suitably arranged for convenient and ready examination.

There seems no other practicable way of effecting this object than to get possession of the large hall, now principally occupied by curiosities brought home by our exploring expeditions. These curiosities have no natural connection with the Patent Office, and would find a much more appropriate resting place within the walls of the Smithsonian Institution. There is plenty of room within that building for their reception and proper arrangement; and the only obstacle in the way is the expense attendant upon the care and custody of these various articles, which those who have the management of that institution do not feel authorized to defray out its limited income specially appropriated to other purposes. A small annual appropriation for this purpose by Congress would remove the difficulty that now prevents the restoration of this large hall to the use for which it was designed. It is respectfully submitted whether the dictates of sound policy, and even simple justice, do not require this small expenditure, in order that room should be provided in the Patent Office for the full exhibition and complete arrangement of all our models. If this were done, not only could all our models be properly disposed of, but specimens of fabrics and other manufactures and works of art, might be classified and arranged in the manner which the law requires, but which requirement absolute necessity has always compelled the Office to disregard.

The rate of fees required to be paid into the Office needs a thorough revision. Perhaps they will require to be somewhat augmented; since, while the salaries and the number of persons in the Office have been all the while increasing, the fees have remained unchanged-

But an augmentation in amount is not so important as changes in other respects. It is beleived that a tariff might be adopted which would be quite as acceptable to the inventors as the present, and at the same time bring a much greater income into the Office. If, for instance, the whole system of withdrawals were at once abolished, so that the inventors could keep their money in their own pockets until it was required to be paid, and when once paid it were never to be withdrawn, the fees might be even less than they are at present, and at the same time the available amount paid into the treasury would be greater.

Such an arrangement would be much more convenient for the Office, saving some labor, and the transmission of a considerable amount of money from the Office back to the unsuccessful applicants, and enabling us to know at any time the exact condition of our reliable finances, instead of having, as at present, near $50,000 lying idle in the treasury without a known owner. That money might have been much more usefully employed at home until it was wanted here.

Another change connected with this subject which seems to be imperatively called for, relates to the fee required of foreigners. That fee seems to the undersigned enormous and indefensible upon my principle of justice or sound policy. If a Patent is to be regarded as a down right gratuity conferred by the Government on the inventor, simple equity dictates that we should not impose more onerous conditions on the subjects of other governments than those governments exact from our own citizens.—The stern rule of retaliation would ask for nothing more than such reciprocity.

Within the last two years Great Britain has greatly diminished her former high rates of Patent fees. It is believed that in no country in Europe are our citizens taxed for these purposes as severely as we now tax theirs. It is well known that some European governments impose a lower rate of fees on an American citizen than he would be required to pay by this Office; and yet we continue to charge a British subject $500, and any other alien $300, for that which we grant to our own citizens for $30.

But the granting of a Patent is not a mere gratuity by the Government: it is the recognition of an evident right in the inventor. No title to property can be more just or valid than his who has created that property. The rule of natural justice is the same in this respect whether the inventor be a citizen or an alien. It is right that the Government should charge the patentee with the expense of securing him in his title to what was before rightfully his own; but it is questionable whether a revenue should be sought from this source except in cases of great necessity. Is there any sufficient reason why the general rule should be departed from in the case of an alien?

It may seem reasonable that we should charge an alien the same fee that his government would charge one of our own citizens under like circumstances; but it should be recollected that European governments make no discrimination between natives and foreigners.—The high or low rates are the same for all.—Under such circumstances retaliatory measures are not resorted to by us in regard to any other subject.

The oppression to which an alien is subjected at home has never been held as a reason for oppressing him here, even prior to his taking steps to become a citizen. If he holds real estate, we do not levy extraordinary taxes thereon commensurate with what that same property would be taxed if owned in his country by one of our citizens. Why should a different rule be followed in regard to property in an invention?

But there is a reason, founded in sound policy, why greater liberality should be exercised towards a foreign inventor than towards the alien owner, of tangible property. He pays a consideration, which the other does not: by taking out a Patent, he makes the subject thereof public property at the end of fourteen years. The benefits of the invention are then secure, and can never be lost to the world.—High charges deter inventors from parting with their secrets. Many an invention is thus strangled in its birth, which, under other circumstances, might have been developed into something of vast consequence to the world.

There are no lost arts under a liberal and well-regulated Patent Office system; and this is one of its great advantages. If foreign nations choose to place these chief means of human progress in subordination to the requirements of their respective exchequers, we are forbidden to imitate them, both by the condition of our treasury and the well-established policy of our government.

Finally, while we extend the free and full benefits of all our institutions to the alien who comes hither to seek them, should not a course equally liberal be pursued in regard to inventions,—the creations of his ingenuity? Why should these be subjected to incapacities and discriminating taxation? In regard to them should not the whole world be regarded as one republic, of which we should seek to render our Patent Office the capitol, wherein every region should be permitted a free representation?—We tolerate no onerous discriminations against the foreign exhibitors in our Crystal Palaces.—At the cannon's mouth we extend the protection of our flag to the alien who has simply declared his purpose of becoming a citizen, in the same manner as though he were native born.—Ought we to levy a discriminating tax upon the offspring of genius that seek our shores for the express purpose of being naturalized among us?

From the preceeding considerations it seems evident that a great change should be made as to the fees required from foreign applicants.—It is respectfully submitted whether the most convenient, wise, and beneficial rule will not be to abolish all distinctions growing out of geographical considerations, and to charge every applicant a fair remuneration for the trouble given by him to the Office, but no more.

Such a course would be just, generous, and noble; seeking to raise no revenue from those who are the special instruments of human advancement, showing a confidence in the capability of our own inventors to cope on equal terms with those of all the world besides, and taking no inconsiderable step in bringing about that great brotherhood of nations for which a higher civilization is gradually preparing the world.

A change in the manner of taking testimony to be used in cases pending before the Patent Office seems indispensable. There is at present no power to compel the attendance of a witness in such cases, nor to oblige him to answer questions; and it is even doubtful whether he can be punished for perjury. It will not be difficult to provide a remedy for this defect. It will be even practicable to enable a party to obtain a compulsory affidavit, or, in other words, to take an ex-parte deposition, to be used the same as an affidavit, which would often be a matter of very great consequence.

The present mode of appealing from the decisions of the Office is extremely inconvenient, and in many respects objectionable. The Patent Office should possess within itself the entire power to act upon a case up to the time when a Patent issues. The whole matter should then be turned over to the Judiciary. If it be thought expedient to have the action of a strictly legal mind brought to bear upon a Patent before it issues, that mind should form a portion of the Patent Office itself, and be made to exercise a supervisory influence upon all the Patents that are issued by the Office. At present the appellate power is vested practically in either of two highly respectable and inteligent judges, either of whom, under proper circumstances, would no doubt be able to exert a salutary supervisory influence over the Office and its decisions. But the two do not act conjointly, and therefore unity of decision is hardly possible. A few cases go up by appeal out of the hundreds that are decided by the Office. The appellate, and therefore controlling power, cannot be expected under such circumstances to give tone and character to the action of the Office. Besides, under the present practice, the drawings and models have to be removed from the Patent Office to the office of the respective appellate judges: away from the custody of their proper keepers, they are often injured, and always liable to be destroyed or lost.

If it is thought expedient to have as wide a range for appeals as at present, it is believed that a much more convenient and judicious arrangement would be found in having a judicial officer to hear appeals from the decisions of the examiners, with the power of ultimate appeal to the Commissioner.

Many other minor improvements in the practice of the Office might be suggested; but they would look to a general change in the existing laws on the subject. Should such a course be thought expedient, suggestions can readily be made to those having the matter in charge.

There is one very important question, entirely surrounded with difficulties, which deserves a passing notice. It relates to the practicability of preventing the protracted and expensive controversies that are almost sure to absorb a great portion of value of every truly valuable patent during its proper lifetime, and which lay the foundation for many of the claims for extension presented to this Office.

To remedy this evil some have proposed that notice of the pendency of applications for Patents should be published, and that the Patent afterwards obtained should convey an absolute unquestionable title. But on the other hand it has been contended that this would introduce greater evils than it would cure; inasmuch as it might work a great injustice to many who would never hear of the notice, or who might not then be in a condition to engage in the controversy. Others have only proposed that after such a notice the Patent should be incapable of being collaterally brought into question, and, like a judgement at law, only be liable to be assailed by a direct proceeding, which would cut off much of the present litigation.—But in opposition to this it has been objected that by giving such notice many a poor inventor would be harrassed and prevented from procuring his Patent, which, if once obtained without the knowledge of evil-disposed opponents, might be at once turned to account. This objection has no small weight.

The least objectionable course on this subject (if any thing is to be done) would seem to be to allow the patent to issue without notice, as at present, and to possess only its present validity; but that the applicant, either in the beginning or at any subsequent time during its lifetime, should be permitted, if he thought proper, to have the notice given; and that the Patent, if afterwards obtained, should not thereafter be capable of being collaterally assailed.

It will be seen that the usual reports of examiners are herein omitted. This has been done in part because it was believed that their time might be more usefully employed; and in part because such reports rendered it almost impossible to avoid invidious distinctions between patentees who suppose themselves equally meritorious. It was thought a better course to give a clear and brief description of each patent, without further comment, and leave the public to make the proper discriminations. A mere publication of the claims, as has hitherto been done, conveys in most cases no adequate idea of the different inventions. It is confidently believed that the advantages resulting from having the Patents more fully described, and those which required it, or which could in that manner be made more perspicious, accompanied by a cut showing the parts referred to, would be amply snfficient to justify the expense attending upon such an arrangement.—The report has therefore been drawn up with a view to such an illustration of the different Patents. Being, however, unwilling to assume the responsibility of providing the cuts necessary for this purpose, a conditional agreement was made with Messers. Page, Greenough & Fleischmann, by which the cuts are in readiness for use, if Congress feel disposed to purchase them for that purpose. It is earnestly hoped that such a course may meet the ready approbation of your honorable body.

The attention of Congress is invited to the importance of providing some adequate means of preventing attempts to obtain patents by improper means. Several cases have occurred during the past year wherein persons interested in pending cases have sent or offered money to the examiners having those cases in charge, for the purpose of securing favorable action upon their respective applications. This has sometimes apparently been done through ignorance or thoughtlessness, but in other cases evidently with a premeditated corrupt intent. In cases of this kind it seems proper and necessary that penalities commensurate with the enormity of the offence should be visited upon the heads of wilful transgressors.

Respectfully submitted,
CHARLES MASON, Commissioner.

Hon. DAVID R. ATCHKINSON,
President of the Senate.

Maine Mechanics Association.

We have received the circular of this Association, giving notice of a Fair and Exhibition for premiums to be held in the city of Portland, on the 19th of next Sept., (1854.) It is intended that this shall be a large and creditable affair, and mechanics and artisans from the various States and the British Provinces are cordially invited to become exhibitors. Information respecting the rules and regulations, can be obtained by addressing the ex-Committee of which H. C. Barnes, Esq., is Chairman.

Dr. Marshall Hall, of London, is at New Orleans, and, in a series of communications is proposing plans for the draining of that city.

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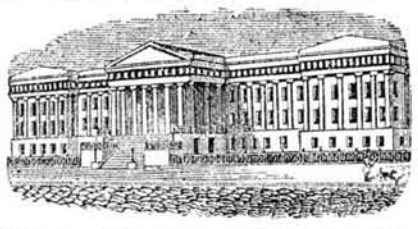

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 2, 1854.8

MACHINES FOR JOINTING STAVES—E. Valentine & A. Bradway, of Monson, Mass.: We claim the combination of the alternate reversely curved ledges on opposite sides of the doubly curved channel, with the springs placed opposite to their concave portions for the purpose of directing the staves alternately to the jointers arranged along said concave portions of the ledges with a properly curved motion for jointing both edges of the staves to a suitable form, as set forth.

We also claim the uniformly flexible metallic strips at the sides of the recess just in front of the cutters, in combination with the adjusting lever, for the purpose of enabling the curvature of the stave to be varied by tightening or slackening the said metalic strips, and thus varying the curved sides of the recess, as set forth.

SHIPS' BLOCKS—Elbridge Webber, of Gardiner, Me.: I claim the shell of cast or wrought metal, into which are fitted the wooden cheeks and the sheaves, the whole constructed and arranged as described.

PROCESS FOR TREATING INDIA RUBBER—E. D. S. Goodyear, of Stapleton, N. Y. (assignor to the "New York Rubber Company" of New York City): I am aware that water has been forced into the interior of hollow articles of plastic material, by mechanical means, for the purpose of forcing the material against the interior of molds, but such mode of using a fluid I do not claim.

I claim the introduction of water or any other liquid into the interior of articles which require expansive force for their perfect formation to the interior surface of molds, said liquid to be converted into steam, as described.

CHURNS—R. H. Harrison (assignor to R. H. Harrison & J. S. Gallagher, Jr.) of Washington, D. C.: I claim, first, the construction of a churn vessel with hollow or solid double concaved ajustable detachable side gatherers, as shown.

Second, I claim the construction of a churn reservoir dasher having curved or deflective radial chambers of a concavo convex form, with direct radial wings or flanges, as shown, and using the same combined with the double concave gatherers.

Thirdly, I claim also the double application of warm and cold water or ice, in combination with the dasher and the double concave gatherers, as set forth, I do not however claim the application of hot or cold water solely, in the process of butter making, as the same have been employed separately or distinctly heretofore, as is well known.

DISCHARGING APPARATUS OF HARVESTERS—A. J. Cook, of Enon, O.: I claim the device for forcing the unbound grain from the table, in combination with the arm at the end of the reel and the apron, by means whereof the grain is carried from the platform to the receiving table, and thence deposited upon the stubble in convenient quantities for binding.

BELT CLASPS FOR MACHINERY—M. G. Ellsworth, of Auburn, N. Y.: I claim the method of uniting or splicing belts, end to end, by means of metal plates riveted or otherwise secured to the outer surface of and near the ends of the belt, and clasping and interlocking, as described.

HARVESTERS OF GRAIN—B. G. Fitzhugh, of Frederick, Md.: I make no claim to the removable blade in itself.

I claim, first, the movable blade in the fingers, arranged and secured as described,

Second, the combination of a curved reciprocating knife with a curved row of fingers and a curved platform, as described.

Third, constructing the reel with curved beaters as set forth.

Fourth, the combination of a continuously revolving sweep rake with a revolving reel, which disposes the grain upon the platform with its stalks converging to the axis of the rake, as set forth.

SEED PLANTERS—L. B. Fisher, of Coldwater, Mich.: I do not claim the form of the frame or the method of operating the slides. But I claim the combination of the rod, lever, clevis, and pin, when the latter is movable in a longitudinal slot for raising the teeth from the ground, as set forth.

I also claim the attachment of the rods, operating the slides to the hook, as described, so that the slides will remain at rest during the turning of the implement, as set forth.

FEED WATER APPARATUS FOR STEAM BOILERS—Benaiah Fitts, of Worcester, Mass.: I claim in feeding apparatus for team boilers is the arrangement of the steam and water chambers, chains, pipes, and valves constructed and operated, as set forth.

MAKING ZINC WHITE—Richard Jones, of Burlington, N. J.: I claim the method, described, of cooling conveying and oxydizing the vapor of zinc, by means of a jet of air introduced into a closed retort, as described.

I also claim constructing the conduit pipes, so that every portion of them shall be inclined in such manner as to prevent the accumulation of matter to clog them and to direct the current of vapor downwards on entering the condensing chambers, the conduits thus constructed and operating, being arranged over the collecting or condensing chambers, as described.

SMUT MACHINES—Seymour Ketchum, of Lancaster, O.: I do not claim of itself building the concave of staves with vertical openings between or in them, for the dust &c. to pass through.

But I claim the concave constructed as described, that is to say, of loose staves, so fitted to or connected with the heads of the concave as to be capable of circular adjustment with facility and dispatch, as specified, for the purpose of varying the number and widths of the escape openings between the staves, the said staves being formed on their inner face, with a longitudinal step or steps inclining outwards backwardly in relation to the travel of the runner, whereby the width of the openings between the staves may be made large, so as to form a ready escape for the smut, dust, and other extraneous matter without letting out the grain or wheat there through, and whereby the clogging of the escape openings by damp smut is avoided, as set forth.

PORTABLE HEAD-REST FOR CHAIRS—C. P. Bailey, of Zanesville, Ohio: I claim the apparatus, as described, consisting of a back plate with arms, for supporting the band or cushion upon which the head rests, the whole being sustained by the hips which hold it in place at all times disconnected with the back of the seat, but resting against or upon it so as to be at once taken away without injury to the seat and folded up in a portable form, the whole being constructed and arranged as described.

SUB-MARINE SCOOPS—Anson Balding, of Oldney, Ill.: I claim the combination of the scoop and sled, as described and for the purpose, set forth.

HOT-AIR FURNACES—T. W. Chatfield, of Utica, N. Y.: I claim the radiators, constructed as described, and for the purposes described, the whole being arranged and combined as set forth.

I am aware of the patents of Gordon Fox, patented in 1843, and of G. Walker, patented in 1844. I do not claim anything contained in either of these patents, but only these points and contrivances wherein I have improved upon both of these patents.

MACHINERY FOR OPERATING CAR BRAKES—Jos. Marks, of Dunkirk, N. Y. (assignor to Wm. Whitney, of Roxbury, Mass.) Patented in England, Nov. 23, 1852: I do not claim any mode of forcing the brakes of one or more cars against their respective wheels by any mechanism brought into action by a power generated on an axle of the engine.

But I claim, first, the adjustable spring clip or clips, in combination with the pall, lever or levers and the draft rope thereof, and as applied and made to operate, as specified.

Second, in combination with the cord extending from the locomotive to the brake shaft and the pulley, I claim the traveling nut, screw, stud, and pin, in the manner and for the purpose specified.

Third, I also claim the combination of the lines and the mechanism for operating the same, as described, whereby the several brake springs of a train of cars may be wound up simultaneously, or one or more of them at a time, as required, in combination with the line, and the mechanism for operating the same, so that by adjustment of the spring clips, the several brakes of the train may be either simultaneously, or one or more at a time, put in action to retard or arrest the motion of the cars.

Finally, I claim generally, in my improved method of operating car brakes, the combination of main springs for pressing the brake against the wheels, mechanism for winding up the springs so as to remove the pressure from the brakes, and to hold the springs in a state of tension, ready to apply pressure on the brakes, instantly, on being released, and mechanism to release the springs, and allow them to act, both the mechanism for winding up and that for releasing the springs being so constructed and arranged that it can be operated on either the locomotive or on the separate cars, and also capable of such adjustment that the brakes of all the cars, can be either simultaneously, or one or more at a time, and in any required order of succession put in action.

MACHINERY FOR OPERATING CAR BRAKES—J. Marks, of Boston, Mass., and J. Howarth, of Salem, Mass. (assignors to Wm. Whiting, of Roxbury, Mass.: We claim the improvement of so adjusting the relative lengths of the relieving branch lines of a train of two or more cars by means of adjustable pulleys, and connecting these lines by a single main line, that all the relleving mechanisms of such train may be put in operation in such a manner that the brakes of the several cars of the train may be either simultaneously or in succession thrown out of action on the wheels or relieved of the pressure induced by the main spring or springs, as specified.

Heretofore we have constructed the main spring of a single coil bar or plate of metal, which being necessarily of a high temper in order to give it sufficient strength and prevent it from setting, it is liable to break from a variety of causes among others sudden changes of temperature, and when broken the apparatus is entirely disabled, and the lives of those depending upon its efficiency, thereby endangered; to such a spring as this we make no claim, neither do we claim a spring simply composed of two or more bars or plates of metal.

But we claim the combination and arrangement of a series of independent springs with the mechanism for applying the force produced by their tension to press the brake rubbers upon the wheels, this mechanism being put in action either for the locomotive or from the separate cars by the engineer or other person having it in charge, or automatically, and with certainty and promptness to detached cars, whenever one or more of them become detached from the train, either by design or accident, in such manner that each spring will act with its whole force, independently of all the rest, so that in case one or any number of less than the whole of the springs shall break, the mechanism will not be thereby disabled, but merely rendered less efficient, and as even the minimum of efficiency thus left may be sufficient to prevent an accident to the car on which the apparatus is placed, and would in any case lessen the damage, if it did not prevent the accident, the safety of railway traveling, is thereby increased.

We also claim in combination with the main spring shaft, and the frame, the apparatus by which the power of the main spring is prevented from acting too suddenly, or so as to rupture or injure the brake chain when the slack of it is taken, as stated, meaning also to claim the combination of parts or elements constituting such apparatus, the same consisting of the wheel, the rubber, the lever, spring K, catch lever, slide, with its stud, cam, spring Q, and the tripping cam, as specified.

We also claim the mechanism for disengaging the retaining pawl of the ratchet, that is to say, the tubular shaft or sleeve and its oblique end acting as a stop in combination with the windlass shaft, and its oblique end to act in connection with the oblique end of the sleeve, as described, so that in case the shaft should be turned back by the movement of the spring with too much force, its screw may not bind in the screw of the sleeve, and thus prevent the apparatus from working.

We also claim the improvement of so combining the windlass shaft with the fusees or apparatus by which it is put in rotation that it may be disengaged therefrom in order to relieve the car wheels from the pressure of the brakes, without rendering it necessary to do so by rewinding the springs.

We also claim the combination of the key or feather, and the locking arm, or their equivalents, with the shafts, the same being for the purpose specified,

We also claim the improvement by which each windlass or pulley shaft and its main line is connected, viz., by a branch line, for a loose pulley and friction screw or contrivance, as combined together and with the main line and windlass shaft, and made to operate as specified.

TONGUING AND GROOVING TAPERING BOARDS—John Absterdam & W. B. Merrill (assignors to J. A. Woodbury, of Winchester, Mass., and W. B. Merrill.) of Boston, Mass.: We claim, first, giving to the tonguing and grooving cutters, a motion either towards or away from the edge of the board, so as to adapt them to boards of different widths or of a tapering shape, by means of the traveling carriage, with its adjustable cross bar operating upon the guide and connecting bar, attached to the slide which carries the cutters, as described.

Second, We claim giving to the traveling carriage a quick or slow motion proportionate to the length of the board to be jointed, so as to convey a similar motion to the tonguing and grooving cutters by means of the adjustable sliding bar, band, and cones, operating together, as described.

STEREOTYPE PANS—R. D. Mott, of Spring Garden, Pa.: I do not claim the pan proper, nor its lid; but I claim the substitution and use in stereotype pans of a single horizontal casting plate, combined with the adjustable attachments for holding the single faced plaster molds, the said attachments having chisel like cutting edges on their ends for cutting and trimming the said molds as they are forced by the operator between them and the plate, and the said casting plate having both its sides fitted with the cutting edged attachments, constructed as described.

FEED MOTION FOR SAWING LUMBER—N. G. Norcross, of Lowell, Mass.: I claim the method of regulating the velocity of the feed rollers of a gang of saws, viz., by a sliding wheel made to operate against the side of a wheel, and to be applied to the shaft, and pressed against the wheel, as specified.

MACHINES FOR FORMING CULTIVATORS' TEETH—David B. Rogers, of Pittsburgh, Pa.: I claim the arrangement of the cutter or knife and swaging dies, when constructed and operated as described, whereby I am enabled to swage the sheet blank into shape, and to give to the foot of the tooth by the cutter its shape and edge, after it has been swaged into form, and when it is held firmly between the dies.

HARVESTERS—Wm. H. Seymour, of Brockport, N. Y.: I claim the combination of the shaft, E, for rotating the pinion, the shaft, I, for turning and carrying the rake and connecting the mechanism constructed and arranged as described, whereby the rake is turned up and down, and firmly held in either position in a simple and convenient manner, without producing an undue strain upon any part of the driving gear.

I also claim the adjustment of the rake at varying hights from the platform in its elevated and depressed positions, by means of the device described, or its equivalent.

PUMPS—Joseph Smart, of Northern Liberties, Pa.: I claim, first, the mode of applying the outward chamber for supplying the inner chamber above the piston, and discharging the same, and the manner of connecting the valves with both chambers, as described.

Secondly, I claim the invention of the upper or movable valve seat with gate attacned, as exhibited, with the mode of securing the same to its bed by the open washer, and inside screw bearing on the top of the washer, as described.

SHINGLE MACHINES—H. C. Smith, of Cleveland, Ohio: I do not claim any one of the separate devices shown: but I claim the special and precise arrangement, and the mode of operating the devices set forth.

TENONING, &C., BLIND SLATS—T. G. Stagg, of Jersey City, N. J.: I am aware that cutters similar to the ones described, have been previously used on rotating disks for similar purposes, I therefore do not claim these cutters separately.

I claim, first, the employment or use of the stationary knives and the cutters, arranged upon a rotary disk, the knives and disk with the cutters attached being secured to a vibrating head, two heads being employed on one machine, and operating as set forth.

Second, I claim the employment or use of the clamp lever and staple or pricking lever, arranged and operating as described, for the purpose of properly clamping the slat and pricking the same or driving the staple therein.

FURNACES FOR ZINC WHITE—J. G. Trotter, of Newark, N. J.: I claim the combination and use of the upper and lower discharge or passage ways from the fire place to the furnace, that is, the upper passage way for discharging or carrying off the lighter gases from the fire place by the reverberatory flue and return flues to the chimney, and the lower passage ways for discharging the flame from the fire place direct upon the mass of ore on the bed of the furnace, and thereby reducing or subliming it more effectually and with less consumption of fuel than ever before accomplished.

I also claim the combination of the alternating series or bridges or brakes in the return flues, with the reverberatory flue doubled arched conformation of the roof of the furnace and the upper passage way and lower passage way, from the furnace, for the purpose of working zinc ores for making white oxyd of zinc, as set forth.

OIL CUP FOR STEAM ENGINES—Geo. Trott, of Pittsburg, Pa.: I claim the arrangement of a double valve, and the passages for feeding and discharging the oil, as described.

MACHINES FOR BENDING SHEET METAL—Wm. Webster, of Morrisania, N. Y.: I claim the non-axled cylinder, as arranged, in relation to the rollers and mandrel, whereby I am enabled readily to adapt it to rolling and bending sheet metal, as described.

RAILROAD CAR WHEELS—R. A. Wilder, of Schuylkill Haven, Pa.: I claim the groove in the wheel near the flange, in combination therewith the convex form of the tread.

TRACK CLEANERS FOR RAILROADS—E. H. Ashcroft, of Boston, Mass.: I claim the method of cleaning snow or ice, or other obstacles from grooved railroad rails by means of a picker and mould board or scraper, as described.

COOKING STOVES—Joseph Leeds, of Philadelphia, Pa.: I claim, first, a fire box formed or composed of a series of vertical tubes, through which air is introdnced to be heated, in combination with the air space under the top plate, and around the oven, as described.

I also claim so arranging the oven as that it shall not be in contact with any of the plates which are directly in contact with the heated products of combustion, but be heated by hot air, as described.

HAND PRINTING PRESS—H. Underhill, of Canandagua, N. Y.: I claim the method of operating the platen by hand intermittently in connection with a reciprocating double frisket carriage whose movement is derived from a continuous rotary motion whether produced by hand or power so that as the carriage brings the frisket of each end alternately under the platten, the latter may be made to descend at the will of the attendant and independantly of the movement of the carriage, so that its depression may be omitted if a blank sheet is not placed over the form, as described.

SACKETS BRAIDING MACHINE—Ephraim, Titus, and Emerson Sizer, and Amos Halladay, of Westfield Mass.: We claim the construction of the racers with the tail guides, as described.

We also claim the combination of the spring guides with the flanges on the carriers, for the purposes set forth.

We further claim guiding the racers by means of spring and tail guides operating either on the interior or exterior of the shell or circle, as set forth.

OPERATING THE DOCTORS OF CALICO PRINTING CYLINDERS—James Baxendale, of Fall River, Mass. (assignor to himself and James Furguson), of Taunton, Mass.: I claim a compound traverse machanism constructed of eccentric gears and a pinion gear and a supporting frame, as described for obtaining a compound traverse or constantly variable reciprocating movement of the doctor of a calico printing roller.

REISSUE.

SUBSTRATA FOR PAVEMENTS—Horace P. Russ, of New York. Original letters patent dated March 14, 1848: I do not claim to have invented or discovered any of the materials or parts described or used herein.

But I claim, first, leaving seems or other openings in the concrete foundation, as described, that the direct escape of the water, gas &c., may indicate the point or points at which repairs in the pipes are required.

Second, the construction in pannels or sections the concrete foundation to give access to pipes and conduits below, by the application and combination therewith of frames formed of any suitable material with the thinner edge upwards to allow the concrete mass to be lifted out when necessary, as described, when this is combined with a paved roadway of any kind laid thereon, as described.

DESIGNS.

COOKING STOVES—S. D. Vose, of Albany, N. Y.
COAL STOVES.—S. D. Vose, of Albany, N. Y.

Gutta Percha Tubing and Hollow Ware.

The following is the specification of the patent granted to S. T. Armstrong, of this city, in the 24th June, 1851, for making tubing and other hollow ware, such as bottles, &c., of gutta percha:—

"My improved process is applicable to the making of all kinds of hollow articles which can be formed in molds, such as bottles or articles which may be made hollow, of gutta percha, or gutta percha compounded with other substances.

After the gutta percha, alone or compounded with other substances, has been properly cleansed and prepared in any known or appropriate manner it is to be formed into a pipe or tube, in the manner of making lead pipe. And for this purpose I use any of the known machines for making lead pipe. The gutta percha during this part of the process should be kept at a temperature of about 150 degrees of Fahrenheit's scale, which degree of heat is best preserved by applying heat to the exterior of the cylinder of the machine as is sometimes practiced in the manufacture of lead pipes. As the gutta percha pipe issues from the die of the machine in a heated state, it is plastic and adhesive, so that the end can be closed by pressing it together. I then cut off a piece of the length required, and insert it in a mold, such as is used for molding glass with the the closed end downwards, and after opening the upper end I insert the end of a metal pipe connected with an hydraulic apparatus and force in water under a sufficient pressure to expand the gutta percha, until the external surface is brought in contact with the entire surface of the mold. I continue the pressure of water until the gutta percha is cooled and set, and then I remove the pressure and take the article out of the mold where it will be found to have taken the exact form of the mold of whatever figure it may be.

If the form of the article admit of it, the mold may be made in a single piece, or it may be made in two or more parts, depending on the form of the article to be molded; and if the article to be produced is to be made with a neck, when the piece of gutta percha pipe is put into it, the upper end is to be prepared for the reception of the water pipe by first inserting a conical plug into it until the external surface is forced out against the mold, and the inside is made sufficiently large to receive the water pipe, but if the article to be prepared be without a neck, then the gutta percha pipe is to be cut of greater length, and the open end is bound around the nozzle of the water pipe to prevent the escape of water when pressure is applied. When the article has been formed the surplus is then cut off and the edge properly trimmed. Bottles, vases, tumblers, powder flasks, and such articles can be made in this way to great advantage, and of great beauty, as the mold can be ornamented and chased in any way to suit fancy, and however figured if sufficient pressure be applied, the gutta percha will receive the impression of the entire figure As the gutta percha is cooled by forcing in the water to expand it, it will be set in the mold and retain the form thereof.

Many articles which are not required to be, but which admit of being made hollow, such as ornamental figures, may be advantageously molded by my improved process, and if required after such articles have been molded, the nozzle through which the water was introduced can be properly trimmed and closed up.

What I claim as my invention in the process described, is the method substantially as described of molding articles of gutta percha, or the compounds of gutta percha with other substances, by first making the same in the form of a pipe, and whilst in a partially heated and plastic state, giving to it the form required in a mold by forcing a liquid inside to expand the gutta percha as described."

[From the many inquiries which have been made of us about this patent, we deem it to be one possessing no small amount of interest.—[ED.

Great Belting.

A Boston paper was lately crowing over the manufacture, in that city, of the largest belting for machinery ever constructed in the United States. It was 127 feet long. Longer belts than that have been constructed here of India Rubber and of Gutta Percha. One recently sold by Thornley was 227 feet iong. An India Rubber six ply Belt of 152 feet was recently constructed for Mr. Maginnis, at Pottsville, to hoist coal at his shaft. It was 22 inches wide and weighed six hundred pounds. The stoutest belt ever made of India Rubber is one just completed by Thornley, for hoisting coal. It is twelve-ply, of India Rubber, three-fourths of an inch thick, and 60 feet long, weighing 228 pounds. The strength of such a belt, with the well known tenacity of India Rubber, is equal to any strain which the power of ordinary machinery can put upon it.—[Philadelphia Ledger.

A Monument to Watt.

A somewhat curious proposition is now being agitated in Scotland. It is proposed to build in Greenock, a great pile or cairn, of stones gathered from all parts of the world, in honor of James Watt, the mechanic who first applied steam to the working of machinery.—The pile is to be erected in a new cemetry on the western front of a high hill, which commands a magnificent view of the river Clyde, and of the neighboring country for many miles around. On the summit of this elevation, a spot has, from the first laying out of the grounds, been received as a suitable site for this monument to Watt, of a more substantial and striking description than any tribute erected to his memory.

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New Inventions.

Float Protector in Steam Boilers.

Wm. H. Akins, of Ithaca, N. Y., has invented a new improvement for protecting the float which is employed for indicating and regulating the height of water in steam boilers. The float in steam boilers is oftentimes rendered very unsteady in its action by the foaming of the water in the boiler, and it therefore fails to indicate with accuracy the level of the water, and though often used as a means of governing the feed, it is not perfectly reliable. This improvement protects the float by enclosing it within a chamber, which extends from the top of the boiler down to the lowest range of the float, and which only has communication with the other part of the boiler through a number of small openings sufficient to keep the same water level and the same pressure of steam, within as without the casing. The water within this chamber will remain free from agitation during the time the most violent agitation is going on without, leaving the float unagitated, to indicate the water level.

Reaping and Mowing Machines.

John J. Weeks, of Oyster Bay, Long Island, N. Y., has taken measures to secure a patent for an improvement in reaping and mowing machines, consists, 1st, in the employment of a track clearer of a spiral form placed at the side of the machine opposite to the side where the gearing is secured. 2nd. in peculiar means employed for elevating and depressing the front end of the machine for the purpose of enabling the cutter to be set the required distance from the ground, to cut close or otherwise, and to be easily raised over any obstruction that may be in its path. 3d. The fingers are formed with a series of notches in their sides, immediately below the slots in the fingers, through which the teeth of the cutter pass, to prevent the grass or grain from being forced outward by the teeth when acted upon by them. 4th. Each tooth of the cutter or sickle works through the fingers, and every alternate tooth is bevelled in a direction opposite to the intervening teeth, so that if one tooth is so bevelled that its cutting edge works over the upper edge of the slot in the finger, the cutting edges of the two adjoining teeth will work over the lower surfaces of the adjoining fingers, and thus prevent clogging.

Improved Cotton Gin.

Israel F. Brown, of Columbus, Ga., has taken measures to secure a patent for an improvement in cotton gins, the nature of which consists in constructing the ribs in such a manner that the parts of them which wear out may be several times renewed without taking the bars from the machine. A cast iron hub with two or more arms at equal distances apart is employed; each of these arms is of the form of the upper portion of a rib, and contains a chilled part, corresponding with the chill in the arms usually employed. A number of these hubs corresponding with the required number of ribs, are arranged upon a shaft at equal distances apart, and one arm of each hub is made to occupy the position usually occupied by the upper part of a rib. Short ribs corresponding in form with the lower part of the ribs usually employed are secured to a bar, corresponding with the lower rib bar which is usually employed. The upper ends of these short ribs, fit to the lower ends of the arms on the hubs in such a manner that when the hub shaft is properly secured the short ribs and the arms, form a series of ribs like those commonly employed. When one set of arms is worn out, the shaft on which they are secured, has but to be turned in its bearings to bring a new set into contact with the short ribs; it is thus that the wearing parts are renewed, as completely as if a new set of ribs were furnished.

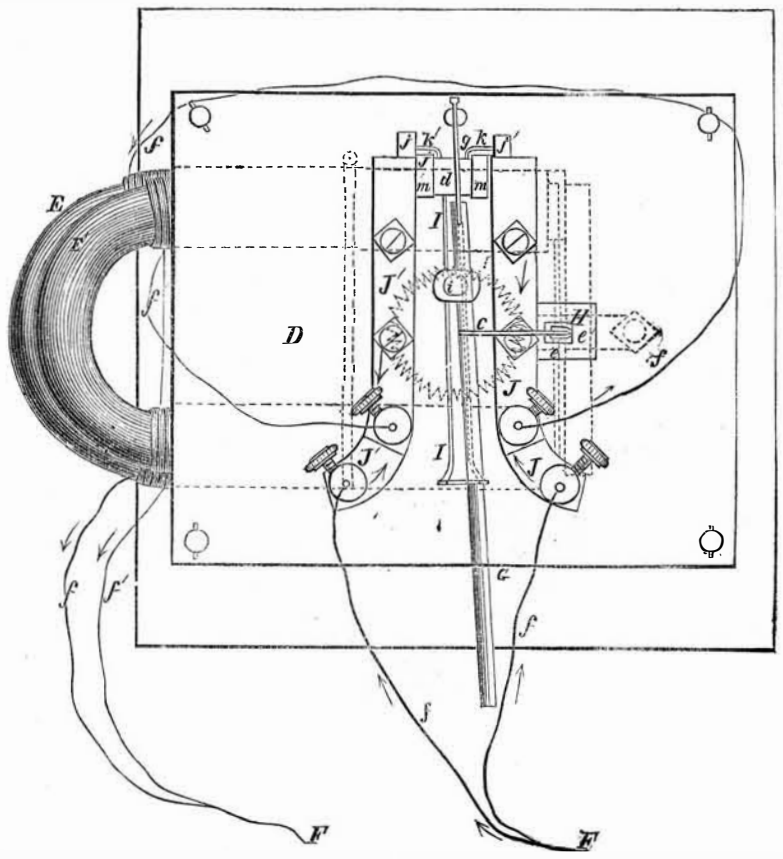
A memorial has been received by Congress, from the American Association for the advancement of Science, setting forth the necessity and advantages of establishing a national Geographical Department.

Hall's Telegraph Clock.

[*Continued from the First Page.*]

brought between the brass pieces, *j j*, on the magnets, J J, and thus the circuit through the wire, *f'*, is broken, and a circuit is formed through the wire, *f*, following the direction of the arrows, figure 4, running from the magnet, E, along, *f*, above, and back from the thumb-screw, at *f*, on the lower wire below. The magnet, E, now attracts the armature, *e*, and the beam and pendulum resume the position shown in said figure. By a repetition of this operation, the beam receives a continuous vibratory motion, and gives motion to the clock movement, and at the same time furnishes the maintaining power to keep up the motion of the pendulum. The main arbor, K, of the clock movement receives motion from the beam by means of two click teeth, *n n*, at equal distances from the center of the beam; they act upon the ratchet wheels, *l l*, on the arbor, as the beam vibrates. These ratchets have thirty

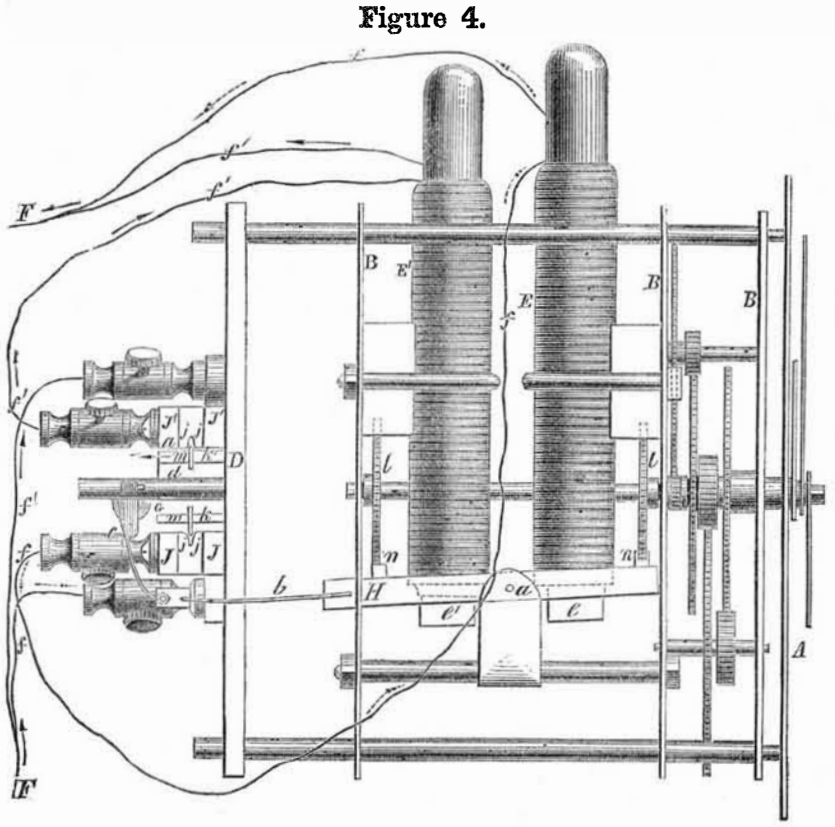
Figure 3.



teeth, and are arranged upon the shaft with the teeth of one opposite the spaces on the other; one click falls into a space at every vibration of the beam, and thus causes the ratchets to move half a tooth, thus requiring sixty vibrations of the beam to revolve the arbor once. The arbor has the second hand of the clock fast upon it, and the pendulum is of the proper length to vibrate once in a second; the second hand therefore makes one revolution in a minute. Motion is transmitted from the arbor, K, to the minute and hour hands by a suitable train of wheel-work.

This clock is believed to possess advantages over all other electric clocks. One consists in the application of the power to the pendulum near the axis of oscillation, as in the common clock that is driven by weights or springs, instead of at the pendulum ball. When the power is applied at the ball, variations in the strength of the battery, make the pendulum move irregularly. Another consists in the mode of applying the power by means of the vibratory beam and spring—the latter preventing shocks and deviations of the pendulum from a uniform isochronal movement, which might

Figure 4.



otherwise be caused by atmospheric influences and variations in the battery. The method of closing the circuits through the two electro-magnets, and the arrangement for securing the connection, by which the circuits are closed, are such as to ensure perfect operation.

This clock is capable of communicating motion to a number of other clocks, and to them the motion may be communicated in a number of ways, but the most simple plan is to furnish each of the subordinate clocks with a single electro-magnet, and to carry one of the wires, *f f'*, around the whole series of magnets, before uniting it with the wire, F, as shown in fig. 1. A beam with the armature of the magnet attached to one end, and with a light spring at the other, applied in such a way as to throw the armature away from the magnet when the circuit through the wire is broken, will serve to give motion to the main arbor of each clock, in the same manner as the beam, H, gives motion to arbor, K.

Figure 5 represents a new mode of breaking and closing the electric circuit by means of an ordinary clock, when the pendulum is propelled by weights or springs. This improvement dispenses with a great portion of the battery power, which is required in the other case where the regulator or governing clock is moved by electricity, as described, so that a common regulator clock with this circuit breaker attached, can break and close the circuit of a line of clocks, without interfering with the motion of the pendulum in the least. There is a brass wheel, B, secured on the crown shaft, around the rim of which are thirty ivory pins, *a a*, equi-distant, with thirty intervals of brass of equal surface. On either side are binding screws, D D, from which wires pass in the usual manner to the battery, and through the line of clocks. To each of these binding screws is secured a small spring, *b d*, with a platinum point resting on the surface of the key wheel, to secure the connection of the electric circuit. The point of the spring, *d*, passing near the shaft, rests continually on the brass surface, while the point of the spring, *b*, rests alternately on the ivory and brass as the crown shaft revolves. Thus at one vibration of the pendulum, the platinum point of the spring, *b*, rests on the ivory pin, or other non-conducting substances, which breaks the circuit through the whole line of clocks, when the armatures are drawn back from the magnets, by means of a small

Fig. 5.

spring, in the usual manner; but at the next motion of the pendulum the key wheel moves a sufficient distance to bring the platinum point in contact with the brass, which closes the circuit throughout the line of clocks, bringing up the armatures of each magnet, which gives motion to the works of each clock on the line as described. Substituting this improvement for the pendulum clock, figure 1, its application to move the whole line of clocks in that figure will at once be understood.

One great advantage accompanying this invention is the employment, by Prof. Hall, of an electric battery upon a new principle, the expense of which is very small indeed. We have one of these batteries in our possession, and consider it to be one of the most economical we have ever seen.

Prof. Hall has sold a portion of this invention to James M. Thomson, of 505 Broadway, and Messrs. Smith Reeve, & Co., machinists, corner of Canal and Center streets, who can be consulted in reference to the matter. The attention of railroad companies is invited to this improvement, as one for increasing the safety of the travelling public.

The inventor proposes giving a public demonstration with a series of telegraph clocks in a short time, having been tendered the use of the Merchants Exchange in Wall street, for that purpose.

More information may be obtained by letter addressed to Prof. Hall, at Loydsville.

Sewing Machine---Important Patent Case.

We have received a newly printed copy of the late decision of Judge Sprague, of Boston, in the Sewing Machine Case, of Howe, vs. Underwood. Having no room to present the subject clearly in this, we will take the opportunity of doing so in our next number. This decision is of great importance to all those who use, construct, and sell sewing machines.

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Scientific American.

NEW YORK, APRIL 8, 1854.

The Patent Office Report.

The conclusion of the Report of the Commissioner of Patents, which we publish this week, together with that which was published in our last number, affords much matter for reflection to all those who are interested in our patent system, and the number of such is not small. The first striking feature in the Report is the excess of the expenditure over the income. The amount received was $9,471,11 more than in 1852, and the expenditures have been greater by $36,952,92. Allowing $11,923,35 to have been paid for furniture, the increase of current expenses is still $25,029,57 more than for 1852. The additional force made to the examining corps, &c., greatly increased the expenses; but for all this, it is stated in the Report that the deficit is not caused by any extraordinary increase of expenses for the transaction of the real business of the Patent Office, but for agricultural purposes. The amount paid out last year for such purposes amounted to more than $7,000. This was expended for collecting agricultural statistics, and seeds of various kinds, purchased and received from abroad. We believe that an agricultural bureau has done some good, and may be productive of much more, although some members of Congress have declared that the seeds distributed by it were always *liable not to grow*. But we protest in the name of all our inventors against the appropriation of money from the patent fund for such purposes. Such appropriations by Congress are neither just nor honorable. The patent fund should never be applied for any other objects than those connected with invention and discovery. Appropriations for agricultural purposes should be made from the National Treasury, as the object is national, and has nothing to do with new inventions. There is not a single farmer in our country who will say that it is anything but unjust to tax our inventors yearly for collecting agricultural statistics. It would be equally as just to appropriate $7,000 per annum of the Post Office Fund for the Patent Fund, as to appropriate the latter for agricultural purposes. In making these remarks we do not wish to be understood as speaking against appropriations for agricultural purposes; we only speak against the injustice of such appropriations from the inventors fund.

The working expenses for this year (1854) will not be so large in proportion as they were for last year, as the Commissioner says the present force of the office will be able to issue 1,200 patents. We hope Congress will take prompt measures for increasing the room required for the real business of the Office, and remove the collections of the Exploring Expedition, (which have no business there) from the large hall, and allow it to be appropriated for the legitimate purpose of its erection. Our inventor's rights have been too long disregarded, with respect to a proper exhibition of their models. This clearly illustrates an important fact, namely, that however much we may, as a people, be distinguished for inventive genius; however high a place our nation justly holds for being distinguished in arts, sciences, and inventions, the members whom we send to represent our interests at Washington, with few exceptions, are neither by habits, tastes, nor profession, men of science, nor lovers of the arts—agricultural or mechanical. This should not be; our farmers and mechanics should form at least seven-tenths of the members of Congress.

It will be observed that the Commissioner has recommended that when application is made for a patent, that only the amount not allowed by law to be withdrawn, shall be deposited at first, and that the total amount need only be sent when the patent is passed for issue. This is a good idea, it will save all the trouble of withdrawals, and all the uncertainty about the disposal of such moneys.

A reduction of the patent fee for foreigners is also recommended; such a reduction we have always advocated, and we hope our patent laws will soon be so amended. We think that a fee of $100 for all foreigners would be very satisfactory as the first step of reform.

There two are other questions of great importance suggested. One relating to a reform in the Patent Laws for trying appeals, before patents are issued, and the other for mitigating the great amount of litigation which seems to attend every valuable patent. We believe it would result in great dissatisfaction with the office if any more power were concentrated in it than there is at present. We do not think there can be much danger in carrying a model from the Patent Office to the court where the appeal is to be tried in Washington, but all appeals should be facilitated, in order to have as little delay as possible. The present Commissioner of Patents is perfectly capable of judging of any question of fact and law, but if the ultimate appeal was to be made to the one who appointed the Examiner from whose decision the appeal is taken, some might be with propriety suspicious of an undue regard to the views of the latter.

The great expense of litigation attending very profitable patents, is a serious evil, but we confess we cannot see any remedy for this, excepting in the U. S. Courts, ordering every trial to take place promptly. It would not be constitutional to pass a law granting an absolute and unquestionable title to any patent. Owing to the nature of our Federal Government, every citizen can demand a trial by a jury of his peers, and that in the place where he is sued for trespass or infringement. No citizen should be deprived of his property without due process of law, and to make a patent absolute, would involve such power. This Report of the Commissioner certainly contains many excellent suggestions for reform in our patent code; we can heartily subscribe to the most of them, as all our inventors no doubt can. We hope they will receive due and just attention from Congress.

Good Common Roads.

There are four kinds of common roads known and used in our country, namely, mere trodden paths, paved, McAdamized, and plank roads. Good common roads have been held up as an evidence of a country's civilization, but be this criterian of civilization a correct one or not, one thing we know, they are exceedingly pleasing, comfortable, and beneficial to the people who have the good fortune to possess them. Throughout the rural districts, in almost every part of our country, the people suffer great inconvenience from bad roads—especially in the spring when the frost is leaving the ground, and during long periods of wet weather. Of this all are well aware, but even very near our cities, as we have had opportunities of witnessing this year already, the common roads, are also often rendered almost impassable. It would be a great benefit to our people, especially our farmers, if all our rural districts were interlaced and connected with our cities, by firm and substantial common roads, such as would not be converted into rivers of mud, as too many of them are, by a few heavy showers of rain. The Romans made excellent paved roads, "in the brave days of old," and in modern times McAdam proved himself to be one of the greatest benefactors of our race by first constructing roads of small pieces of broken granite. (If we knew who the inventor of plank roads was, we should like to pay him a like tribute of respect.) It is difficult in many parts of our country to obtain stones, either for paving or making McAdamized roads, but where the right kind can be easily procured, the latter kind of road is to be preferred. We consider plank roads one of the most beneficial inventions, for common travel, ever introduced into our country. The materials to construct them can be obtained in almost every part of our extended domains, and we cannot but speak strongly of their usefulness, utility, and economy, and endeavor to impress upon the minds of our farmers, and those who dwell in the rural districts, the great benefits that would accrue to them by the construction of such roads between farm and farm, village and town, country and city. We admit that no inventions have tended to advance civilization and benefit man more than those which have been applied to facilitate public travel, such as steam navigation and railroads, and it is encouraging to know that our country, which is naturally so well adapted for railroads, has now more lines in operation and under contract, than all the other nations of the world put together. But such roads cannot supply all our travelling wants; common roads always have been and ever will be a necessity. The parties most interested in good common roads, are those who own carriages and horses—our farmers chiefly. For public travel and the transport of heavy goods, railroads are the grand desideratum. But when a farmer wishes to draw a load of potatoes, or wheat, or butter. a short distance to market, he cannot afford to pay for a steam carriage to draw the same on a common road; he therefore employs the means which are at his command; he harnesses his team and drives it jocund, whistling as he goes, if the road is good. There are some who keep continually bumming about the use of steam carriages on common and plank roads, but these are not required on such roads—such roads are required for totally different objects. There are some who are loud in advocating impracticable schemes, and exterminating insurmountable difficulties on paper. They *can* vault over mountains on crutches, and march over seas in paper boots, and yet, somehow or other, they never do anything of note, although they are always *about* to do something. If steam carriages could be economically employed on common roads, those who have advocated them have had abundant time and opportunities for proving themselves to be something more than mere projectors.

We have said this much about the necessity of having good common roads, because so much interest is absorbed in our great and grand railroad projects, that the minor—but none the less necessary on that account—common roads are liable to be overlooked. The commencement of the favorable season for out door work on common roads, we consider is a good time for urging these remarks upon the attention of those who are most interested; we therefore hope that while joint stock companies are making our country the great emporium of railroad enterprise, that our farmers and those who reside in the rural districts will set about to exert themselves, and make it equally famous for good common roads.

Indestructible Water Pipe.

FIG. 1. FIG. 2.

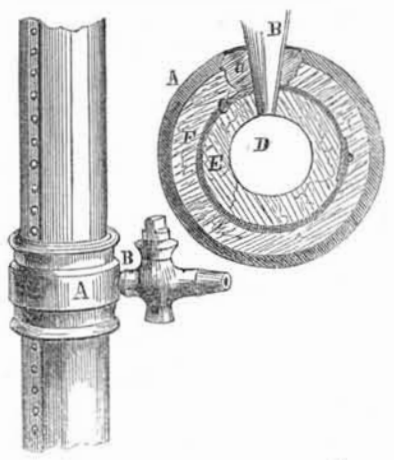

Figure 1 is a perspective, and figure 2 a transverse section through the tap and collar of J. Ball's patent water and gas pipe. This pipe is composed of an interior tube, E, made of prepared hydraulic cement, covered with a pipe of sheet iron, C, such as stove pipe, and which is riveted along its length, as shown in figure 1.

A is a metal collar placed around the part where two sections of pipe are united, and is filled between with cement, F. The pipe for the reception of the cock, B, is tapped through the middle of the collar, A at *c*; D is the interior of the pipe- When laid in the earth these pipes (to protect the sheet iron from rusting) are covered on the outside with a coat of hydraulic cement. The collar, A, for the purpose of receiving a tap and rendering the pipe strong at the joint, is an excellent device. This pipe is presented as a substitute for cast iron and other metal pipes for the supply of water for cities, or for any other purpose of conveying water, &c., where cast iron or lead or other pipes are used. The interior being composed of cement, the water will never act upon it as upon a metal pipe to oxydize the same. It is therefore indestructible, so far as oxydization is concerned, and the water that flows through it, is not rendered impure by its decay. It is said to be stronger than the common cast iron water pipes in general use. In many places this pipe has been in use for some years, especially at Saratoga Springs, where 25,000 feet of it has been laid, and the Water Commissioners consider it preferable to iron pipe—being cheaper and more durable. We believe it to be a very durable and excellent kind of pipe, and suitable for some situations—such as marshy localities—where metal pipes cannot safely be used. For more information respecting this kind of pipe, we would refer to the advertisement on another page, of the Patent Water and Gas Pipe Co., of which Mr. Joseph Battin—the inventor of the celebrated Coal Breaker—is President.

Premium Bank Bills.

Although we have no personal interest whatever in the matter advertised in the "Scientific American," a few weeks ago, offering a premimium for a perfect mode of preventing the alteration of bank bills, yet we dare say we have received more communications on the subject than the parties who offered the reward. Upon the question as presented in that advertisement we cannot decide, because we have nothing to do with it whatever; we therefore will not express any opinion upon this or that plan presented to accomplish the object, so as to meet the views of the Bankers.

We have a letter now before us from S. Sully, of Ida Mills, Troy, N. Y., who proposes to form bank notes by weaving any design in silk, linen, or cotton, in black on a white ground. These notes could all be made on the Bank premises, and several could be woven in one and afterwards separated. Geo. A. Clark, of Fall River, Mass., proposes to manufacture bank bills in nearly the same manner. E. F. French, of Franklin, Vt., proposes to perforate the letters which express the denomination of the bill. M. Gerhard, of Delaware, Ohio, proposes the same plan exactly. N. Young, of Lancaster, Ohio, in a second letter proposes the same plan, only that it shall be the name of the bank which shall be perforated, and that a blank space should be left in the center of each bill for this purpose. Geo. Harvey, of Richmond, Va., suggests that nearly the whole face of the bill be occupied with the figures expressing its value, so that the whole would have to be altered.

An Apology.

We owe an apology to the "Polytechnic Journal,"—and it affords us pleasure to make it—in regard to the statement made in our last issue to the effect that the Commissioner's Report, as published in that journal, was obtained surreptitiously. Its appearance in advance of its regular publication by Congress led us to institute inquiries as to how it was procured, consequently we addressed a note upon the subject to the Commissioner of Patents; he replied that he had no knowledge of the matter. Since the date of his first letter, he has again written us, stating that copies were obtained from the records of the Patent Office, upon the same terms as other documents are furnished; this of course is satisfactory, and assures us that our cotemporary procured the Report in a fair and honorable manner.

It seems that it was entered upon the records of the Office, therefore copies could not be refused to any one who felt willing to pay for them. This is a new and excellent plan, and if carried out in future, the readers of the "Scientific American" may expect the reports to be published in our columns as soon as they are sent to Congress.

Judge Mason, the Commissioner of Patents, is now absent from the Patent Office, on a short visit to his friends in Iowa. He is expected to return in about four weeks.

A number of ships which have recently arrived at this port, report great quantities of ice in the Atlantic. The Pacific was detained for some hours among icebergs in her recent voyage.

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Water Wheels---The Turbine---Article 2.

[Continued from page 230.]

EARLY HISTORY OF TURBINE WATER WHEELS.—19. By the term "turbine," is understood, that class of re-action wheels which receive the water with a whirling motion.

Some short time previous to 1830, it was discovered that, by giving the water a motion with that of the wheel previous to its acting on a re-action wheel, the effect would be greater than when the water came into it without motion in that direction.

Z. and A. Parker obtained a patent, October the 19th, 1829, embracing this principle in the specification. Mr. Parker says he discovered the principle, accidentally, in 1827.

In 1823, M. Fourneron of France, commenced an investigation of the action of water on wheels, which terminated in the discovery of the celebrated wheel which bears his name.—He wrote an essay, which was published in a Journal in France, in 1834, giving a full description of the invention, and several machines which he had erected; and was awarded a prize of six thousand francs for the successful introduction of his wheels into use.

It is somewhat singular, that the discovery should have been made on both continents at the same time. Fourneron says he established his first turbine at Pont sur l'Ognon, in France, in the year 1827: the same date of Mr. Parkers discovery in the United States.

The original discoverers, not understanding the principles of action, did not make their claims, when applying for a patent, broad enough to cover the whole grounds; and in consequence, since 1830, a number of patents have been issued to persons of the United States, embracing their principle to a greater or less extent. While all who observe the operation of these wheels see their superior action, few, or none appear to understand their principles of action. And most writers on the subject, appear to mistify, rather than elucidate the action of water on this class of wheels.—Some seem to think the water acts by impulse, some by re-action and re action and percussion combined; while many bring in centrifugal and other unknown forces as auxiliary. Experimenters differ so widely in their reports,—some who are interested giving such extravagant results—that the studying of the elements of mechanics, and becoming familiar with the few principles of nature which originate, carry on and terminate all mechanical movements, are the only means by which millwrights can gain a correct knowledge of the action of the machine. They will then perceive that there is no great mystery about the action of water.

PRINCIPLE OF ACTION.—20. The principle by which the turbine water wheel is made to be more efficient than the common re-action wheel, is very simple, and well known to all mechanicians. It is that principle (see art, 5) which causes a bullet dropped from the ceiling of a steam boat to strike the same point on the floor, as if the vessel were still; that which enables passengers or a car moving 40 miles per hour, to walk forward with as much ease as aft; and the satelites to respect their secondaries as their center of motion, as they would do if the primary was removed and they at rest.

That principle which causes two bodies moving in the same direction, with equal velocity, to act on each other as if at rest.

21. Notwithstanding the earth and moon act on each other while moving around the sun precisely as they would do if the sun were removed and they moving in a right line or were not progressing at all; yet, as some suppose that centrifugal force varies the action of bodies on each other on the earth, it may be necessary, before proceeding to discuss the above principle, to illustrate that principle of inertia by which a body in motion opposes being compelled to describe a curve, called centrifugal force. On investigation it will appear, that, notwithstanding the high authoritiy to the contrary, that there is no such force as centrifugal, and that the very term (centreflying) is erroneous. For bodies moving in a circle have no tendancy, whatever, to fly from their circle of motion; but merely oppose being compelled to move in a curve; (art 3) and are continually making an effort to move in a direct line, not from the centre, but perpendicularly to a line drawn from the centre through the body. If "centrifugal force," be a correct term, then is "vis inertia," equally so; for they are both the same; viz: That principle impressed on on all ponderable matter by which it tends to remain in that state in which it is placed.

FIG. 1.

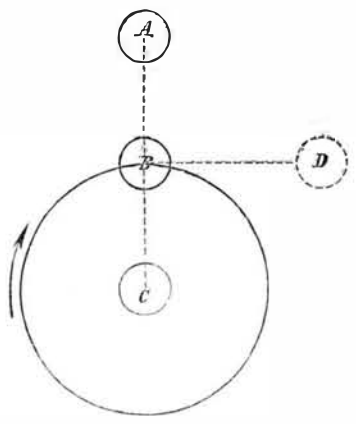

FIGURE 1.—if, while the body B, fig. 1, is moving around C, as its center, on arriving at the point B, in the circle, it should have its connection with C, destroyed, it would not approach A, on the opposite side from the centre C, but would move towards D, perpendicular to a line drawn from C, through B to A; and would have just as great a tendancy to fly from A, as from C. And moreover, its velocity will be no greater after its connection with C, is broken, than when moving in the circle; which would be the case if it tended to fly from C.—See "Scientific American," vol. 7, page 363, for a further illustration of this principle.

22. It was demonstrated, art, 18, that the simple re-action wheel could only approximate to an effect equal to half the power.—On an inspection of its principle of action, it will readily be perceived that the machine is defective; for the water has an actual velocity after leaving the wheel equal to one half that with which it issues; Therefore, one half the power is, necessarily lost. Now if the actual velocity which the water has after acting on the machine, can be consumed in, or prevented by giving the water a motion previous to acting on the wheel; if a machine can be so constructed that it will move as fast as the water issues, and the pressure, or re-action independent of a retarding force will equal that due half the head, we should have a machine realizing the power. If one half the head can be used to give to the water a motion in unison with that of the wheel before acting, and the other half used to impell the wheel by pressure, by art, 20, this may be effected.

FIG. 2.

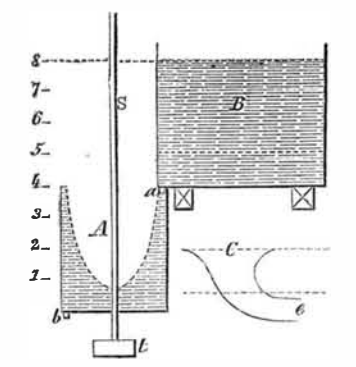

FIG. 2.—Let A, represent a cylindrical vessel on a shaft, or spindle stopped at t; whose depth is four feet. Let B, be a cistern placed over the brim of A, and filled with water to the highth of four feet above the surface of the water in A. a is a bent tube, (see it enlarged at C) inserted at the bottom of B, conducting the water into A, at a tangent to its inner surface; b is a similar tube to a, at which the water issues from A, horizontally, at a tangent to its inner surface, in a direction contrary to the movement of A. c represents a section of the tubes a, and b, on a larger scale, and in another position; e, being the orifice at which the water escapes, and is directed towards the front at a, and b, in the figure. The scale at the right of the figure shows the highth in feet.

When a, and b, are both open, and B, kept full of water; the vessel A, will revolve in a direction contrary to that with which the water issues at b, and in the direction of that at a; and the water in A, will revolve with the vessel. If by any means the velocity of the periphery of the vessel A, should be so retarded that it revolves just as fast as the water issues at the jets; by art 20, the water will re-act at b, and tend to impell the vessel A, as it would do if A was at rest and the water came in at a, perpendicularly. Here we have $v=w=V$, hence, $E=m\div g(V-w\times v)w=P$, the power.

If a friction brake be applied to the shaft s, so adjusted that the periphery of the vessel revolves with a velocity of 16 feet per second, and twenty pounds of water escape per second at b, then the pressure at b, (and consequently its equivalent on the brake) will equal the weight of water that escapes during the time that a body would acquire an equal velocity by falling from rest, and by art 7, as heavy bodies will by falling from rest acquire a velocity of 16 feet per second in half a second of time, the constant pressure at b, and on the brake, will equal one half the weight of the water that issues at b, per second; or, 10lbs. Which being multiplied by the velocity of the wheel per second, 16 feet, will give the effect; equal to 160. And the weight of water issuing, per second, 20lbs. multiplied by the whole highth, 8 feet, will equal the power, 160. Hence the effect is equal to the power. $E=20\div32(16-16+16)16=160$. And, $P=20\times8=160$.

To demonstrate that the effect is doubled by apylying one half the head to giving the water a motion before acting, and using the other half to propell the vessel A. Suppose the water at a, to come into the vessel A, perpendicularly, and A to revolve as fast as the water issues at b, equal to 16 feet per second. Then the whole of the force at b, will be expended in giving the water as it enters the vessel A, a velocity equal to that of the vessel. The retarding force will equal the impellent force, and the effect will be nothing. $w-v=v$, consequently the expression, $m\div g(v-w\times v)w$, vanishes. But if the vessel A, move half as fast as the water issues at b, equal to 8 feet per second; then the retarding force will equal half the impelling force, and the effect will equal half the power. $E,=20\div32(16-8+0)8=40$, and, as in this case the head is the highth of the vessel A, $P=20\times4=80$, or the effect equals half the power. Hence, the effect of the machine is double by using one half the head to give the water a whirling motion before acting.

If the vessel A, be suffered to revolve with a greater or less velocity than that with which the water issues at b, and comes in at a,; the effect will be diminished. But a slight variation will not alter the effect perceptibly; for if A move one eighth slower or faster than the water at the jets, the effect will be reduced only one sixty fourth (1·64) of the whole amount. But if its motion should be increased, or reduced one half, (to 24, or 8 feet per second) the effect will be reduced one fourth.

And if the issues a, and b, be dissimilar in size, the effect will be less; though not appreciable, when the difference is small; for when the orifice at a, is twice that at b, the diminution in effect will only be one tenth. This may be demonstrated by lowering the water in the cistern B, down to the dotted line one foot above a, and enlarging the orifice at a, to double that at b, and letting A revolve at a mean rate between that of the water at a, and b,—equal 12 feet per second, when the effect will be 9, and the power 10.

Here we have a machine that will realize as great a percentage of the power as it is possible to obtain; the principle of action of which is embraced, to a greater or less extent, in all turbines. And the efficiency of the different varieties of this class of motors, depends entirely on how far this principle is carried out in their operation.

Danger of Painted Pails.

"I would desire to direct the attention of the readers of the "Scientific American," to the danger of using pails which are painted inside, for containing water, for domestic purposes.—The oxyd of lead with which they are painted, is a dangerous poison, and I know that it is productive of evil in many cases. Last week, having occasion to take a drink of water from a painted pail, which had been in use for some months, I was convinced from the taste of the water, that it had taken up a portion of the paint, and having analysed the water I found it to contain a very minute quantity of it, sufficient, however, if a large quantity of the water were taken, to produce those fearful diseases peculiar to lead poisonings."

JAMES MANLEY.

New York.

[We advise all persons to avoid using painted wooden pails. A coat of varnish, on the outside is all the embellishment we ever desire to see on a water pail.

Observation and Inquiry.

Sir Edward Bulwer Lytton recently delivered an address before the five Societies of Edinburgh College, on the occasion of his inauguration as Honorary President of these Associated Societies. In the course of his address he made some remarks on the habits of observation and inquiry, which we commend to the attention of all our young men. They are as follows:—

"Nature indicates to the infant the two main elements of wisdom; nature herself teaches the infant to observe and to inquire. You will have noticed how every new object catches the eye of a young child, how intuitively he begins to question you upon all he surveys,—what it is? what it is for? how it came there? and how it is made? who made it? Gradually, as he becomes older, his observation is less eager. In fact, both faculties are often troublesome and puzzleing to those about him. He is told to attend to his lessons and not ask questions to which he cannot yet understand the replies. This reckless vivacity is drilled into mechanical forms, so that often when we leave school we observe less and inquire less than when we stood at the knee of our mother in the nursery. But our first object on entering upon youth, and surveying the great world that spreads before us, should be to regain the earliest attributes of the child. What were the instincts of the infant are the primary duties of the student. His ideas become rich and various in proportion as he observes,—accurate and practical in proportion as he inquires.

The old story of Newton observing the fall of the apple, and so arriving by inquiry, at the laws of gravity, will occur to you all. But this is the ordinary process in every department of intelligence. A man who observes more attentively than others had done, is something in itself very simple. He reflects, tests his observations by inquiry, and becomes the discoverer, the inventor, enriches a science, improves a manufacture, adds a new beauty to the arts, or, if engaged in professional active life, detects, as a physician, the secret cause of disease, extracts truth, as a lawyer, from contradictory evidence—or grapples as a statesman, with the complicated principles by which nations flourish or decay. In short, take with you into all your studies this leading proposition, that, whether in active life, or in letters and research, a man will always be eminent according to the vigilance with which he observes, and the acuteness with which he inquires. But this is not enough—something more is wanted—it is that resolute effort of the will which we call perseverance. I am no believer in genius without labor; but I do believe that labor, judiciously applied, becomes genius itself.

Success in removing obstacles, as in conquering armies, depends on this law of mechanics,—the greatest amount of force at your command concentrated on a given point. If your constitutional force be less than another man's you equal him if you continue it longer and concentrate it more. The old saying of the Spartan parent to the son who complained that his sword was too short is applicable to everything in life,—"if your weapon is too short, add a step to it." Dr. Arnold, the famous Rugby schoolmaster, said the difference between one boy and another was not so much in talent as in energy. It is with boys as with men: and perseverance is energy made habitual."

One of the Aldermen of our City while recently discussing one of the regulations of our City Railroads, said "the carelessness of the Managers of the Hudson River Railroad was unexampled in the annals of *navigation*!"

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TO CORRESPONDENTS.

D. B., of C. W.—Have your spoons quite free from grease, then have a solution of sal-ammoniac ready; dip them into this and then into the molten block tin, and you will be likely to succeed.

D, D., of N. Y.—Prof. Bartlett's (of West Point) Philosophy of Mechanics, published by Barnes & Co., this city, is perhaps the best work you can purchase; the price we believe is three dollars.

A. S., of Tenn.—All iron boats are built with air-tight compartments involving the same principle as that exhibited in your sketch.

M. H. S., of Ky.—You have no doubt read the articles we published on setting the wheels of carriages, these were called forth by an inquiry from us, asking for information. If practical carriage-makers are ignorant of correct rules, who are those that can instruct them.

J. M., of Pa.—Your idea to prevent damage from the breakage of car axles appears to be good. You had better submit it to Mr. Mulholland and get his advice.

J B & Co.. of Pa.—For yours in regard to the punching machine, we are much obliged.

S.K..of Albany—Your alleged improvement in barber's chair appears to be new. We wrote you on the 27th inst., but are not certain of having made out your proper name, as the signature to your letter is about as bungling as anything of the kind we have ever seen: there is no excuse for this because you are a very good writer.

A. H. H., of Va.—Tredgold is the most elaborate work on the Steam Engine, but it is very dear, get the work by the Artisan Club; it is very good. Hodge on the steam engine is also good.

D. McK., of Pa.—We believe the "Vanguard" never made a voyage from Galway to this port; the "Orion" made one, and was wrecked. We do not know whether the "Vanguard" made regular passages from Greenock to Liverpool in 14 and 15 hours or not; but the "Fire King has often done this, yet that is no evidence that these vessels would make the voyage to New York in from 7 to 8 days.

S. G. W., of Mich.—If you pour into the auger hole a strong solution of the sulphate of copper and alum, then cover the inlet with pitch, we are of opinion that it would tend to make the spiles endure much longer.

J, P. B., of Ky.—There is some information about mill ing in the back numbers of this volume, which we cannot send you. The subject is one of great interest, and we may have considerable to say on it hereafter. The nominal horse-power of an engine is calculated by the amount of steam pressure on each square inch of the piston multiplied into its velocity and divided by 33,000. There are 18·84948 (nearly nineteen) square inches area in your piston.

W. McC., of Phila.—We have never heard of the offer of a prize for such a magic lantern as you speak of.

W. A. P., of Miss.—A compressed air telegraph will operate, but we cannot tell the distance a person's voice may be heard in the tube. We do not believe that such a telegraph could be made to pay.

J. G., of R. I.—Messrs. Rossell & Co., Trenton., N. J., have a patent for welding cast steel to cast iron and can furnish any information upon the subject which you may need.

H. S., of Ky.—We do not consider your method of fastening leather to possess any patentable novelty, and cannot therefore advise you to make an application.

G. W. McG., of Mich.—Your improvement in fire arms is, we think, new and patentable. You had better send us a model of it.

A. R. V., of N. Y.—The idea you suggest in regard to improvement in saw mills, is a very good one, and we think it novel. We would advise you to send a sketch and description of it; be very careful in preparing them, so as to enable us to get a clear understanding of the case.

G. P., of N. Y.—We have published Kennedy's process of tanning. You will find it in some of the numbers of this volume.

G. & C. M., of Mass.—We are in receipt of your favor and have carefully examined the sketch of the governor. You will find illustrated in Vol. 8, Tremper's Patent Governor, which is substantially the equivalent of your's.

A. E., of Miss.—In 1830, Commodore Barron, of the U. S. N., obtained a patent for an improvement in ventilators for rooms, designed for hot climates, but for some cause it was not adopted, your plan is entirely superseded by his.

A. R., of N. Y.—In volume 8, of the Scientific American, you will find an engraving of a car axle, which is divided in the center and secured by a sleeve or collar fitting closely. When the car is passing over a curve one wheel plays more rapid than the other, and thus preventing torsion and subsequent breakage of the axle. We have very frequently alluded to this question in the Scientific American.

J, B., of Ill.—On the 18th ult. we replied to your communication by letter, and we presume you will find it in the Post Office.

Money received on account of Patent Office business for the week ending Saturday, April 1:—

J. P. H., of N. Y., $25; N. K., of Pa., $25; R. K., of Mass., $20; D. P. B., of Cal., $30; W. & G., of Pa., $275 G. F. W., of Pa., $55; T. P., of N. Y., $250: C. J., of R. I., $550; G. W. P., of N. H, $32; H. & P., of R. I., $30; T. A., of Mass., $30; M. M. C., of Ct., $55; J. S., of Mass., $30; W. A. P., of Miss., $20; J. S. B., of O., $10; S. & B. of Ct., $30: W. S., of Pa., $250; J. J, W., of L. I., $30; J. B., of N. J., $55; S. & B., of N. Y., $55; C. F. B., of R. I., $25; H. W., of N. Y., $55; K. & B., of L. I., $32; W. & P., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, April 1:—

D. W. K., of Pa.; J. P. H., of N. Y.; E. J. B., of Ky; B. E. P., of Me.; J. K., of L. I.; N. K., of Pa.; A. G., of N. Y.; D. P. B., of Cal.; J. B., of N. J.; H. W., of N. Y.; R. H. C., of N. Y.; W. & P., of N. Y.

J. P. H., of Pa.; J. S. H., of Ind.; S. H., of N. Y.; W. D., of Mich.; I. A. T., of Mass.; J. F. K., of N. J.; G. Y., of Md.; C. F. P.. of Ct.; E. S. H., of Mass.; J. G., of Pa.; S. T., of Ind.; B. E. P., of Me; W. & Co., of O.; J. L. M., of N. Y.; J, E, W., of Mass.; F. Y. S., of Tenn.; F. S. C., of Mass.; G. L., of Pa.; C. D. W., of Ohio; W. V. A., of N. Y.—The engravings of your several machines are in process of execution, and will appear in our columns in the order in which they were received. Don't get impatient, if some are not published for three or four weeks yet.

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16	"	"	$3 00

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☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

EUROPEAN PATENTS.—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments, and to save much time and expense to applicants.

NEW BRICK MACHINE—Now in successful operation in Baltimore. It is so simple that any intelligent negro can learn to manage it in two or three days. You have merely to shovel clay into a box and attach a horse to the sweep. The Machine tempers the clay and molds the brick in the most perfect manner, such as the most experienced hand can scarcely equal. When burned they are found to be stronger and more solid than those made in the usual way, because the clay is worked stiffer under the pressure of the screw than it is possible to mold by hand. For a machine driven by steam, the clay is taken direct from the bank and passed through a pulverizer, which removes the stone and prepares it for the soak-pit. Supposing the clay at hand, nine men and three boys will mold 1,500 bricks per hour. Price $500. A five Mold Machine, worked by a horse, with four men and four boys will make 1,000 bricks per hour. Price $400. A four mold, with the same force, will make 800 bricks per hour. Price $250. Obtained gold medal from the Maryland Institute, 1852; premium from the Maryland Agricultural Society, 1853. For further particulars in a pamphlet, containing full instructions on Brick Burning, address

1* FRANCIS H. SMITH, Baltimore, Md.

HARRISON'S PATENT MILLS—Received the highest premium at the World's Fair; 250 have been sold in two years. The stones are French burr; the frames and hoppers cast-iron, the spindles solid cast steel. They will work better for flouring, and on all kinds of grain and dry substances, and keep in repair longer than any other mill in the world. I have completed my new steam mills for manufacturing and running them, and am now prepared to supply orders for all the sizes, from 20 inches to 4 feet diameter at a fair price. Agents wanted to sell them in all parts of the country. Descriptive circulars, with cuts, mailed to all post-paid applications. EDWARD HARRISON,
Sole manufacturer and proprietor of patent rights,
New Haven, Conn. 30 7*

MACHINERY FOR SALE—The following machines are for sale at the "Scientific American" Office:—Alcott's Concentric Lathe, price $25.
Portable Mortising Machine, $20
Bushnell's Iron Drill, $25
All orders should be addressed (accompanied with the cash) to MUNN & CO., 128 Fulton st., N. Y.

PATENT WATER AND GAS PIPE CO.—Jersey City. This Company was formed March 2, 1 54, under the General Manufacturing Law of New Jersey, with a capital of $250,000. They are now erecting three buildings and machinery for the manufacture of Ball's Indestructible Pipes, adjoining the Hudson River Cement Co.'s Works, Jersey City. They are now prepared to receive orders to furnish and lay the above-named pipes, with a sufficient guaranty of their superiority in every respect over any other Pipes now in use for the distribution of water. JOSEPH BATTIN, President.
30 4*

FORBUSH'S IMPROVED MOWING AND REAPING MACHINE—Manufactured and sold by the "American Mowing and Reaping Machine Co.," Buffalo, N. Y., warranted as good as any other machine in the country for grain or grass, and as a combined machine superior to any in the world. Orders for the machine for the harvest of 1854, should be sent on early.
30 4* C. W. SMITH, Sec'y.

METALIC LETTERS AND FIGURES—To put on Patterns, Roman style. Size, 5-16, 3 cents; 3-8, 3cts; 1-2, 4cts; 5-8, 4cts; 3-4, 5cts; 1 inch. 6cts; 1 1-4, 7 cts; 1 1-2, 8 cts; 2 inch., 10 cts; they can be sent to all parts of the Union, either by mail or Express, we weigh all packages, and send them the cheapest way: we also manufacture several sizes of Lift and Force Pumps expressly for railroad water stations, mills, &c., a superior and well-finished article, and warranted the best in market. Address, COWING & Co., Seneca Falls, N. Y.
30 2

PORTABLE FORGES AND BELLOWS—(Queen's patent). The best forge in market for Blacksmiths work, Boiler Makers, Mining, Quarrying, Shipping, plantations, Contractors on Railroads and Public Works, Coppersmiths, Gas Fitters, &c., Also an improved Portable Melting Furnace for Jewellers, Dentists, Chemists, &c., both of which are constructed with sliding doors to protect the fire from wind and rain when used outdoors, and for perfect safety and free escape of smoke when used indoors. They are compact for Shipping. Circulars with particlars and prices will be forwarded upon application. Cast iron Columns, for building constantly on hand. Jobbing, Piano, and all kind of work promply executed. FREDERICK P. FLAGLER,
29 10* Sole Manufacturer, 210 Water street, N. Y.

NOTICE—My residence is at the National Hotel, Washington City, after the 20th of March instant, where notices of opposition to my petition for the extension of my patent must be directed. Papers that were authorized by the Commissioner of Patents to publish his notice of my petition will please give the above three insertions, and send their bills to me at Poughkeepsie, after the 22d of May next. SAM'L. F. B. MORSE.
29 3

STEARNS & CO.'s Mammoth Catalogue, containing a list of 2,000 Books and Prints, will be sent by mail gratis, to all who may order it. Address,
17 Ann st., N, Y., STEARNS & CO., Publishers. 29 4

WANTED—The situation of Foreman in a Railroad or other machine shop, by one who has had much experience in designing and constructing machinery, especially locomotive and stationary engines.
28 4* F. GARDNER, Boston, Mass.

MINING MACHINERY—Of most approved construction, furnished by FRED'K COOK & CO, Hudson Machine Works, Hudson, N. Y. 15 6m

UNITED STATES PATENT OFFICE,
Washington, March 14, 1854.

ON THE PETITION of Willard Dalrymple, executor of Samuel Sawyer, late of Boston, Massachusetts, deceased, praying for the extension of a patent granted to the said Samuel Sawyer on the 10th of June, 1840, for an improvement in machine for cutting corks, for seven years from the expiration of said patent, which takes place on the tenth day of June, eighteen hundred and fifty-four, (1854)—

It is ordered that the said petition be heard at the Patent Office on Monday, the 29th of May next, at 12 o'clock, m.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing. All testimony filed by either party, to be used at the said hearing, must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 19th of May; depositions and other papers relied upon as testimony, must be filed in the office on or before the morning of the 20th May; the argument, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evening Argus, Philadelphia, Pa.; Scientific American, New York; Post, Boston, Mass.; and Inquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the 29th day of May next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S—Editors of the above papers will please copy, and send their bills to the Patent Office, with a paper containing this notice. 29 3

UNITED STATES PATENT OFFICE.
Washington, February 13, 1854

ON THE PETITION of John N. Vroomam, of Niskayauna, New York, praying for the extension of a patent granted to him on the 15th day of April, 1840, for an improvement in floating swing bridges, for seven years from the expiration of said patent, which takes place on the fifteenth day of April, eighteen hundred and fifty four, (1854)—

It is ordered that the said petition be heard at the Patent Office on Friday, the 14th of April next, at 12 o'clock. M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York; Post, Boston, Massachusetts, and Enquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the 14th day of April next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 25 3

STAVE MACHINERY.—The "Mowry Stave Cutter and Jointer Combined," which received the highest award at the Crystal Palace, is the only machine that ever undertook to joint a stave properly at the same time that it was cut and dressed, without rehandling. One man tends the machine and turns out from a solid block of wood ninety staves a minute, ready for the truss hoop. It is not only the best in use, but for slack work we challenge the world. For machines and rights in New York, apply to CHARLES MOWRY, Auburn. For machines and rights in other parts of the United States, apply to GWYNNES & SHEFFIELD, Urbana, Ohio. 29 tf

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or details of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers. Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc.
CHARLES W, COPELAND,
29tf Consulting Engineer, 64 Broadway.

MATHEMATICAL AND OPTICAL INSTRUMENTS—The subscriber begs leave to bring to the notice of the professional community his new and extensive assortment of the above Instruments, which he partly imported direct from the most celebrated makers in Europe, and partly had manufactured under his own personal supervision. The undersigned would particularly invite attention to his very large and complete assortment of the justly celebrated Swiss Mathematical Drawing Instruments, for the sale of which, in this country, he has the sole agency, and which he can furnish at from $5 to $200 per case. Those Drawing Instruments received the prize medal at the London and New York Exhibitions. Orders from any part of the Union promptly executed, and price list sent if required.
C. T. AMSLER,
21 6eow* 224 Chestnut st, Philadelphia, Pa.

MACHINERY.—S. C. HILLS, No. 12 Platt-st., N. Y. dealer in Steam Engines, Boilers, Iron Planers Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's, and Law's Planing Machines; Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines; Belting; Machinery Oil, Beal's Patent Cob and Corn Mills; Burr Mill and Grindstones; Lead and Iron Pipe, &c. Letters, to be noticed, must be post-paid.
27tf eow

1854. WOODWORTH'S PATENT PLANING, Tonguing, Grooving, Rabeting, and Moulding machine.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $800. Two machines are at the Crystal Palace. For rights in all parts of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 18eowtf

IRON FOUNDERS' MATERIALS, viz: Pulverized Sea Coal, Black Lead, Soapstone, Anthracite and Charcoal Facings. Also, best imported Fire Bricks, Fire Clay, Fire Sand, and Moulding Sand, for sale by
G. O. ROBERTSON,
13 13eow 135 Water street, corner of Pine.

CLOCK'S FOR CHURCHES, COURT HOUSES, &c.—Regulators for Astronomical purposes, Jewellers; also Time Pieces for Session Rooms, Railroad Stations, Offices, &c., which for accuracy of time and durability have proved (it is believed) equal to any made in Europe or this country. Glass Dials for illumination, and other kinds furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, N. Y. 10eowtf

THE CRESCENT FOUNDRY & MACHINE CO. Bridgeport, Conn., make to order Stationary Steam Engines from 8 to 150 horse power, large double acting Force Pumps for water works, Iron Planers, Engine Lathes built in the most substantial manner and UNCOMMONLY HEAVY. Machinery in general and all kinds of Steam Boilers. Having a large and extensive stock of mill gearing and other patterns, the accumulation of 18 years, they are prepared to furnish castings at short notice. Any work ordered from this Company will be guaranteed equal to any made in this country. They would call attention to a large lathe which they build, designed for Railroad Machine shops for turning of drivers. They also make a very large and heavy lathe with screw feed, designed for Machine Shops in general. They are now making a vertical Engine of new design from 8 to 10 horse power, which will require but the small space of 4 feet square (the bed being 24 by 34 inches) and with a vertical boiler will require only 4 feet by 8 feet.
18 12 1am*

NEW HAVEN MANUFACTURING COMPANY—New Haven, Conn., (successors to Scranton & Parshley) have on hand Power Planers, to plane from 3 to 12 feet; slide lathes from 6 to 18 feet long; 3 sizes of hand lathes, with and without shears; and counter shafts; universal chucks; drill presses, index plates, bolt cutters, and slide rests. The N. H. M. Company also have the right for Harrison's patent Flour and Grist Mill for the term of five years, and are prepared to furnish these superior mills at short notice. They are unequalled by any other mill, and will grind from 20 to 30 bushels per hour, and will run without heating, being self-cooling. They weigh about 1400 lbs., are of the best French burr stone, 30 inches in diameter; are snugly packed in a cast-iron frame, price of mill $200, packing $5. For cuts, prices, and further particulars apply post-paid, as above, or to S. C. HILLS, agent N. H. M. Co., 12 Platt st., N. Y. 22tf

PORTABLE STEAM ENGINES—GEORGE VAIL & CO., Speedwell Iron Works, Morristown, N. J., LOGAN VAIL & CO., No. 9 Gold st, N. Y., are prepared to furnish Portable Steam Engines from four to eight horse power, with locomotive boilers. These engines are recommended for their simplicity, durability, and economy, being made from the best materials and designed for practical use. They are placed on wheels convenient to be moved from place to place, and are shipped in working order: for plantation use, machinists, or others wanting small power, these engines will be found superior to any others in use. A Silver Medal was awarded at the late Fair of the American Institute, and a premium in cash of $100 at the Maryland State Fair, held at Baltimore in October last. Persons writing us by mail will be particular to give their address in full.
21 38*

JOHN PARSHLEY, No. 5 and 7 Howard st., New Haven, Ct., manufacturer of Machinists' Tools, and Steam Engines, has now finishing off 25 Engine Lathes, 6 feet shears, 4 feet between centers, 15 inches swing, and weighs about 1100 lbs. These Lathes have back and screw gear, jib rest, with screw feed, and the rest is so arranged that the tool can be adjusted to any point the work may require, without unfastening the tool, hence they possess all the good qualities of the jib and the weight lathe; they are of the best workmanship. Price of Lathe with count shaft and pullcys, $155 cash. Cuts, with full description of the lathe, can be had by addressing as above, post-paid. Also four 30 horse power vertical Steam Engines with two cylinders. Price of engine with pump and heater, $800 cash. For particulars address as above. 19tf

SCREW CUTTING MACHINES, with P. W. Gates' Patent Dies—The subscribers keep constantly on hand three sizes of the above-named machines, to wit—No. 1 machine, 10 sets dies and taps from one-half to two inches, $350: No. 2, 8 sets dies and taps, one-half to one and a half inches, $250; No. 3, 6 sets dies and taps, three-eighths to one inch, $150. Cash on delivery at shop. P. W. GATES & CO.
Chicago, Ill. 27 13

HUDSON MACHINE WORKS and Iron Foundry—at Hudson City, N. Y., are prepared to contract for castings for railroads, bridges, buildings, gas pipes and posts, water pipe, cast-iron ornamental floors, cannon, &c. Steam engines and boilers, high and low pressure, sugar mills, Cornish lifting and forcing pumps for mines; stamps, mortars, and mining machinery;—also superior hydraulic pumps and presses, and superior machinists' tools made to order. Especial attention given to the making of patent machines. Orders by mail will receive prompt attention. New York Office No. 18 Exchange Place.
FREDERIC COOK & CO.
F. COOK, H. McCLELLAND. 27tf

CLINTON FOUNDRY—502 and 504 Water street, N. Y. A large and valuable collection of pulley and machinery Patterns; also loam and dry sand Castings, such as Printing and Steam Cylinders, Sugar Pans, Kettles, Vats, Curbs, Rollers, Pipes, &c. A general assortment of Pulleys always on hand.
26 6* REANEY & McKINLEY

C. B. HUTCHINSON'S PATENT STAVE Cutting Machines—The best in use, and applicable alike to thick and thin staves, for barrels, hogsheads, &c.; also his Head Cutting and Turning, and Stave Jointing and Crozing Machines. This machinery reduces the expense of manufacturing at least fifty per cent. For machines or terrirorial rights, apply to C. B. HUTCHINSON & CO., Syracuse, N. Y. 27tf

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.
CHARLES W. COPELAND,
20 tf Consulting Engineer, 64 Broadway.

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months.. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the patentee at Albany, N. Y
27tf GEO. W. BEARDSLEE.

SHINGLE MACHINES—Wood's patented improvement in Shingle Machines, is unquestionably the best ever offered to the public. The undersigned is now at the West, offering rights in this machine for sale. It is a rare opportunity for a safe and profitable investment in a machine without a rival, for the purpose to which it is applied. Parties wishing to correspond with me can do so by addressing J. D. JOHNSON,
21tf Bridgeport, Ct.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American.
16 1y*

WROUGHT IRON DIRECT FROM THE Ore—The owners of James Renton's Patent are now prepared to sell rights for this most valuable invention. Apply to JAMES RENTON, Cleveland, Ohio, or to A. H. BROWN, 107 Market st., Newark, N. J. 27 10*

BAKER'S IMPROVED BOILER FURNACE—As used at the Crystal Palace: orders received for Stationary, Marine, or Locomotive Furnaces on this plan, and also for the rights for towns, counties, or States: certificates can be shown of furnaces in use for stationary, marine, and locomotive furnaces, with saving from 30 to 50 per cent. in fuel. J. AMORY,
25tf General Agent, 28 State st, Boston, Mass.

McALLISTER & BROTHER.—Opticians and dealers in mathematical and optical instruments, No. 48 Chesnut st., Philadelphia, Pa.—at the old stand established in 1796 by John McAllister, Senr, Mathematical instruments separate and in cases, Tape Measures, Spectacles, Spy Glasses, Microscopes, Thermometers, Salometers, Hydrometers, Magic Lanterns, &c., &c. Our illustrated and priced catalogue are furnished on application, and will be sent by mail free of charge. 10 25*

NORRIS WORKS, Norristown, Pa. The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping, and Portable Engines, and Mining Machinery of every description.
41 1y.* THOMAS, CORSON & WEST.

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Scientific Museum.

[For the Scientific American.]
Meteorological Calculations.

The following table of meteorological calculations is made for the months of April, May, and June, 1854—showing the time of passage of atmospheric influences, and also their average velocity of movement in miles per day; being a continuation of a similar series of calculations from page 144 of your present volume:—

Time of passage.	Velocity of movement.	Classification of influence.
April 3, 3 A. M.	673	1
" 3, 12 M.	882	5
" 17, 10 A. M.	884	5
" 22, 12 M.	943	5
" 24, 12 M.	1031	2
" 27, 5 A. M.	726	4
May 8, 6 A. M.	819	5
" 11, 1 A. M.	948	1
" 11, 9 A. M.	1026	4
" 19, 2 P. M.	802	7
" 23, 2 P. M.	987	3
" 28, 11 A. M.	993	5
" 29, 3 P. M.	807	1
June 9, 3 P. M.	882	3
" 14, 11 P. M.	988	1
" 15, 0 A. M.	1018	2
" 20, 8 A. M.	806	2
" 29, 11 A. M.	877	2

REMARKS—No. 1 in the classification of influences is the greatest power. The average movement of the influences for the three months ending June 30th, 1854, will be about 892 miles a day—being 28 miles more than the general average, and 36 miles above the average for the first three months of the year. From this statement of facts there appears to be, in summer, an increased activity manifested in atmospheric circulation, as it relates to the velocity of influence, and the movement of storms.

The longitudinal circulation of the atmosphere has it nodes or places of crossing distributed, first, according to certain dynamical laws; and secondly, by the condition of certain relations subject to these laws. The minimum and maximum lines of pressure, as indicated by the barometer, correspond to these nodes, and likewise travel eastward under the influence of the action of the same laws.

Besides the atmospheric disturbances or waves that move around the earth from West to East, there is also another kind of storms that have their origin in the torrid zone, and differ essentially, in the phenomena presented, from the extended ones of temperate climates. Such storms, when rotating out of the torrid zone and visiting the northern temperate regions of the earth, may be called "southwesters" from the fact that they always approach us from that point. During their prevalence the upper strata of clouds are also sometimes seen, through openings in the lower, moving slowly from the southwest, while the surface current is generally moving with great velocity from the north-east.

These storms are first formed in the torrid zone by the action of the laws of atmospheric influence, and are carried by the trade-winds to the westward with a velocity, said to be less than fifteen miles an hour; with this slow rate of progress, they struggle in these strong currents that flow without ceasing, to the equator; but instead of approaching it, as would be inferred from a glance at the trade-wind system, they recede in a line, forming a curve to the northward, and finally enter the belt of high barometer near lat. 30° north; being there freed from the trade-wind influence of the equator, they move in a direct line and with an increasing velocity, to the north-east, if the primary storm influences favor the egress, but if such is not the case they scatter or connect with the ordinary disturbances of our zone.

The most favorable time for a visit from a rotating storm, is when two or more of the influences are moving with a space of considerable vacancy intervening. Such a position seems to invite the "southwester" from its home in the torrid zone. It connects with the central line of the intermediate space in the belt of high barometer—emerges with the south-west trade winds, and then if it moves it must move towards the north-east.

The first calculations ever published respecting the appearance of one of these storms was verified by the predicted one passing over the eastern part of the North American continent on the 26th of February last. After it had escaped from the torrid zone and passed the belt of high barometer, it moved to the north-east, between two influences or nodes of minimum pressure, that were travelling with an intervening space of about 9,000 miles, and extending, theoretically, from North to South, Continuing to occupy this central line of vacant space, its north-eastern course is due to the eastward progress of the storm lines in its advance and rear.

The cyclonic action of storms is only manifested between the tropical belts of high barometer; and if we inquire for the course we will find it existing in the physical condition of the earth and atmosphere, and in their adaptation to the effects of those peculiar forces that induce storms to travel eastward in every part of the globe.

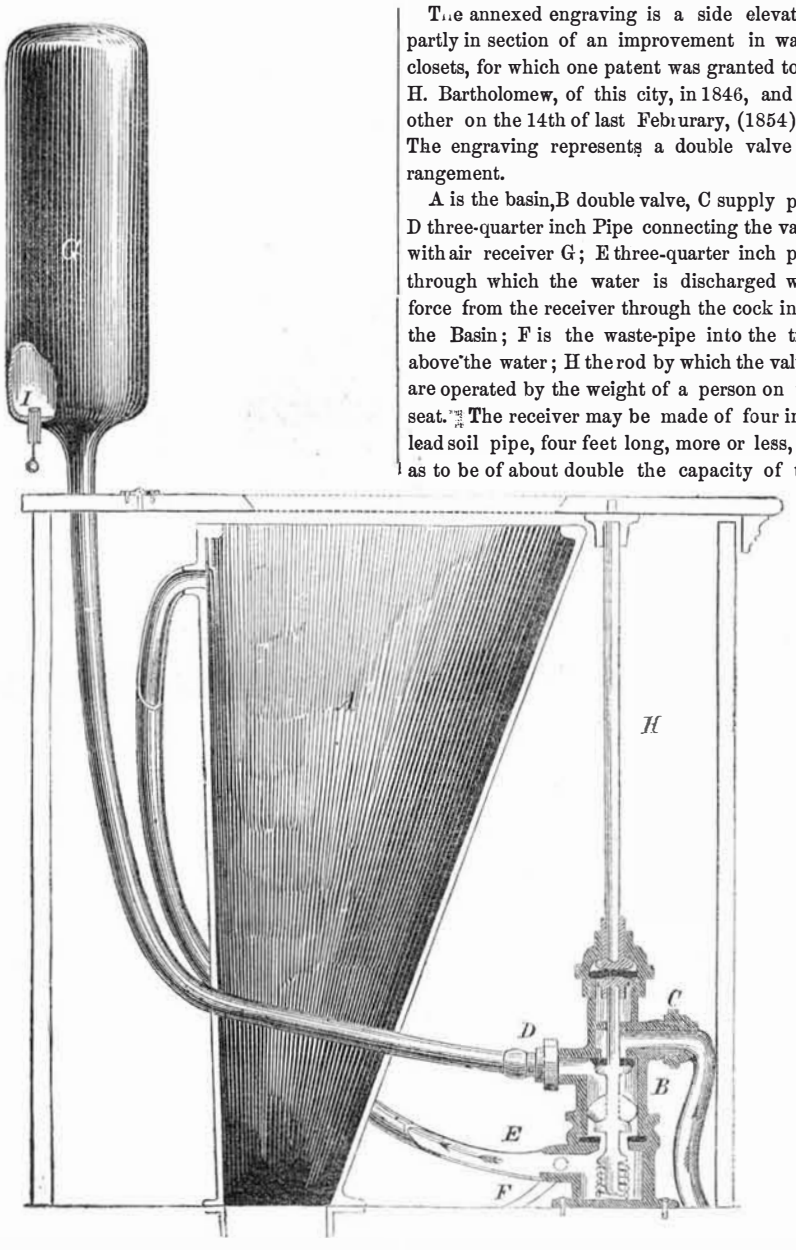
With this explanation of the rotary theory of storms, the problem involving the laws and conditions of the phenomena accompanying "southwesters," is solved so far, that isolated facts, and observations can no longer be depended upon; but in analyzing any theory of storms, the whole system of atmospheric circulations must be brought into view, and the deductions made in accordance with the principle adduced, from the theory of atmospheric influence.

J. HALL.

Athens, Menard Co., Ill.

[This communication came too late for publication in the last number of the "Scientific American.

BARTHOLOMEW'S IMPROVEMENT IN WATER CLOSETS.



The annexed engraving is a side elevation partly in section of an improvement in water closets, for which one patent was granted to F. H. Bartholomew, of this city, in 1846, and an other on the 14th of last February, (1854).—The engraving represents a double valve arrangement.

A is the basin, B double valve, C supply pipe D three-quarter inch Pipe connecting the valve with air receiver G; E three-quarter inch pipe through which the water is discharged with force from the receiver through the cock in to the Basin; F is the waste-pipe into the trap above the water; H the rod by which the valves are operated by the weight of a person on the seat. The receiver may be made of four inch lead soil pipe, four feet long, more or less, so as to be of about double the capacity of the quantity of water desired to be used each time. I is a valve opening inwards, in G, for the purpose of admitting air into the chamber, and keeping it charged with the same, in case the water should not all run out, or in case the air should from any cause be expelled. This valve may be inserted in any other part of the air chamber, but it seldom requires to be used.—This double cock is designed to avoid the great waste of water which attends the use of most kinds of cocks, and is a desirable article in all places where the economical use of water is desideratum. These cocks consume a limited quantity of water each time the closet is used, taking no more water whether the seat is set upon one hour or one minute, no water being thrown into the basin while the seat is set upon.

When the valve is pressed down by the seat, the water passes from the supply pipe C through D, into the chamber G, until the air in it becomes so compressed as to balance the pressure of water in the supply pipe when the inlet flow of water will cease, however long the upper conical valve may be left open. No water is therefore discharged into A while a person is seated, but upon the removal of pressure from the seat, the upper valve, by the spring on the stem below, is forced up into its seat, and then communication is opened between the pipe D, and the one E, leading into H. The pressure of the air in G, therefore forces the water into A, and thus, the quantity of water for washing out is always graduated by the supply pressure, for the purpose set forth.

By the use of this valve and receiver, the use and expense of the cistern, service-box, valves, cranks, ball and ball cock, overflow-pipe, levers, &c. are avoided—the whole of this fixture (except the receiver) being placed under the seat out of sight, making a cheap and simple, arrangement. The water cannot overflow, there being no opening for it except into the waste tube or into the basin, and consequently should the valve become leaky, it cannot wet the floor, but must leak only into the discharge-pipe, keeping the floor dry. One-Service pipe will supply any desired number of these double valves, and not prevent a proper force of water throughout other parts of the building.

This double valve aparatus is not likely to freeze, as the receiver is always empty during the night and whenever not in use, the waste tube discharges all the water above the valve.

These apparatuses are extensively used, and are applicable for private houses, and public buildings, in various places. They are made by the patentee, at No. 84 Marion-st., this City, where more information may be acquired repecting them.

Lowell Spindles.

The number of spindles run by the incoporated companies at Lowell is 349,898; number of males employed, 4607; number of females employed, 8743; total 13,250. There are 2,100,000 yards of cotton cloth, 27,000 yards of woolen, 25,000 yards of carpet and 50 rugs made per week, for which there are consumed weekly 700,000 pounds of cotton and 99,000 pounds of wool. The population of the city is about 35,000.

A shock of earthquake was experienced in Macon, Ga., on the 20th. It lasted 40 seconds. No damage was done.

LITERARY NOTICES.

OLD BLACKWOOD—Blackwood's Edinburgh Magazine for March is just issued by its enterprising American publishers, Leonard Scott & Co., this city. This is allowed to be the most able and famous monthly magazine in the world. The present number contains a biograph of D'Israeli, and another article, named the "Epidemics of the Middle Ages."—two out of ten powerful original articles—which are worth the price of the work.

THE OLD FARMERS' ALMANACK.—By Robert B. Thomas,—number sixty-two. We are indebted to Messrs. G. & C. Merriam, of Springfield, Mass., for copies of this old familiar acquaintance.

COACHMAKER'S GUIDE—This is a work which is published yearly by C. W. Saladee & Co., of Columbus, Ohio. It contains two large charts with excellent draughts of various kinds of fashionable carriages, both American and European. The drawings for the volume of 1854, are now preparing in this city and will be issued in June next. This publication is one of the most useful in our country, and we heartily commend it to the attention of all coachmakers.

PHRENOLOGICAL JOURNAL AND WATER CURE JOURNAL.—These interesting monthlies are issued with great promptness by Messrs. Fowlers & Wells, of this city; they are crowded full of useful and entertaining matter which will be found serviceable and timely to all. Terms of each, $1 a year.

HOUSEHOLD WORDS—April number just received from McElrath & Barker, No. 17 Spruce street. The present number completes the volume of this valuable and interesting publication. and it is therefore a good time to subscribe. A new story. entitled "Hard Times." by Charles Dickens is announced for the future numbers of the work.

THE SHIPBUILDER'S MANUAL.—The twelve numbers of this work, edited by John W. Griffiths are now complete and for sale by Adriance. Sherman & Co., this city. It is a very useful work to all shipbuilders.

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